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FOREIGN ECONOMIC AID AND COMMUNISM[1]

CALVIN B. HOOVER
Duke University

I

THE war in Korea has taught us the lesson that it requires bayonets, rifles, machine guns, tanks, and airplanes—and, not least, rugged soldiers to man them—to stop Soviet aggression. Indeed, there never was any excuse for our failure to realize that economic measures, however well planned and administered, can never be counted upon by themselves to protect any country against military attack. Logic alone, without the necessity for our recent hard experience, should have informed us that, in a world where war is possible, the most highly industrialized and most productive national economy is no more than a kind of mechanical cow capable of furnishing everything from tanks and airplanes to milk and honey for a future conqueror, unless the will and the means to defend the national economy exist.[2] Once the minimum means of initial military defense for a great industrial economy do exist, of course, the military might of a country in the modern era is almost in direct ratio to its industrial potential.[3]

[1] Although the original Foreign Assistance Act of 1948, by a sort of appendix, made 463 million dollars available for aid to China, the analysis of the actual effects of ECA in stopping communism are restricted in this article to western Europe. The ECA program has now been extended to Korea, Indochina, Siam, and Burma. Since there is currently strong pressure for extending United States financial aid throughout Southeast Asia, in the concluding paragraphs of this article some attempt is made to apply to Asia the results of the ECA experience in Europe.

[2] We might have remembered Plutarch's comment about King Perseus, who lost Macedonia to the Romans because of his niggardliness in employing the great treasure which he had amassed to wage war against them. "Whereas Perseus, abounding in wealth, would not preserve himself, his children and his kingdom, at the expense of a small part of his treasure; but chose rather to be carried away with numbers of his subjects with the name of the wealthy captive, and show the Romans what great riches he had husbanded and preserved for them" (Plutarch's life of Aemilius Paulus, in Plutarch, *The Lives of the Noble Grecians and Romans*, translated by John Dryden and revised by Arthur H. Clough [New York: Modern Library], p. 327).

[3] The military advantage of a highly industrialized country over a less industrialized country may be offset in an important degree by the much greater amount of impedimenta and the much more complex organization required by the army of a country like the United States as compared with that of Soviet Russia. Thus we must conscript more than three times as many men as the Russians in order to place a given number of men in actual combat units.

How could it be that the United States would embark upon a program which contemplated the expenditure of some sixteen to seventeen billion dollars[4] over a period of four years to furnish economic aid to western Europe at a time when, as experience in Korea demonstrates, our own military preparation for defense was completely inadequate and the military defense of western Europe almost non-existent?[5]

To answer this question raises the whole problem of the causal connection between the onward march of Soviet communism and the Marshall Plan. Was stopping communism, indeed, the main purpose for which the ECA was set up? Was it expected that communism could be contained by economic aid alone?[6]

To prove that the Marshall Plan was intended to stop Soviet aggression by shoring up the non-Communist governments of western Europe would seem an entirely unnecessary task. No country, group, or even individual denies it *in toto*, not even Communists or fellow-travelers.[7]

There is no mention of this purpose in Secretary Marshall's speech at Harvard on June 5, 1947, in British Foreign Minister Bevin's speech eagerly accepting Marshall's proposal on June 14, 1947, in President Truman's telegram asking a number of citizens to serve on the Harriman Committee, in the charter setting up the Organization for European Economic Cooperation, in the bilateral agreements entered into between the United States and participating countries, or in the Foreign Assistance Act itself. The failure to mention stopping communism or Soviet aggression reflected in part the kind of official circumspection which, while customarily honored in the breach by the Soviet government, non-Communist governments still tried to maintain so long as the war with Soviet Russia had not yet become "hot."[8] It reflected also, as will be

[4] The President's Committee on Foreign Aid estimated the probable cost of the ECA program to the United States over a period of four years at from 12.5 to 17.2 billion dollars (*European Recovery and American Aid: A Report by the President's Committee on Foreign Aid* [Washington, D.C., November 7, 1947], p. 76). A section in the Foreign Assistance Act would have established a ceiling of seventeen billion dollars on aid furnished and would have implied a commitment to furnish aid in an amount approximating this over the four years. This section was stricken out at the instance of Senator Vandenberg, who pointed out that one Congress could not bind succeeding Congresses.

[5] If it is wise for us to spend in desperate haste perhaps fifty billion dollars for military purposes during the next two years beyond the amount contemplated before the Korean crisis, then it is certain that we could have been spending, say, at least one-third of that sum for additional military preparation during the last two or three years to our great national advantage. Nevertheless, it would have been exceedingly difficult to have induced Congress to have simultaneously appropriated funds both for ECA and for an adequate defense program. The attempt was never made. Instead, appropriations for ECA were advocated as a clear alternative to larger military expenditures (see the statement of Kenneth C. Royall, Secretary of the Army, *Hearings before the Committee on Foreign Relations, United States Senate, on United States Assistance to European Economic Recovery* [80th Cong., 2d sess.; Washington, D.C., 1948], Part I, p. 444).

[6] To the extent that military power might be needed to stop Soviet aggression, Congress, the public, and even, in some degree, our Joint Chiefs of Staff, relied almost entirely upon strategic air power and the atomic bomb. The vital limitation of the use of the atom bomb against Soviet aggression in any case which could be made to look even remotely like civil war had not yet been demonstrated by the Korean war.

[7] They would only deny the fact of Soviet aggression while readily admitting that one purpose of the Marshall Plan was to maintain non-Communist governments in power.

[8] Of course, no one of our top officials was in any doubt about the aggressive intentions of Soviet Russia, although their judgment was not very prescient about when the danger of attack would be greatest and about the measures which might be successful in preventing Russia from waging war against us. This awareness of the Soviet threat is reflected in Secretary Marshall's testimony before

pointed out later, some intellectual confusion with respect to the possibility of opposing communism exclusively by peaceful means.

The essential circumstance is that the Marshall Plan was the direct descendant of the "Truman Doctrine," which had been proclaimed by the President only about three months earlier. The Truman Doctrine, while promising military aid to Turkey and Greece, had been bluntly coupled with an avowal of the intention of the United States to aid countries faced with the threat of outright military conquest. Yet there had certainly been no diminution in the threat of Soviet aggression between the time of the declaration of the Truman Doctrine on March 12 and Secretary Marshall's speech at Harvard on June 5.[9]

In my judgment, Congress could not have been induced to embark on the program which was carried out by ECA if the issue of stopping communism had not been invoked. It must not be forgotten that the International Bank and the International Monetary Fund, UNRRA and the British loan, had been "sold" to Congress to an important degree by the argument that each of these was "to take care of the international economic situation" and that, if only this new particular "chunk" of billions was voted, Congress would not be asked for more. Naturally, Congress had grown exceedingly skeptical of this line of argument.

The appropriations of the Marshall Plan billions represented a new departure in that they were not disguised as a loan.[10] Furthermore, the funds appropriated were neither for relief in the charitable sense, as had been true of UNRRA, nor for arms and munitions, as in the case of Lend-Lease. This was a bald case of taking funds from the taxpayers of the United States and giving them to the governments of other countries in order to improve economic conditions in these countries. This indeed represented a landmark in the development of national policy. United States taxpayers were to be taxed for benefits to accrue in the first instance to foreign governments and their citizens, without any general policy or procedures being laid down as to when similar action might be taken in the future. It was an absolute necessity that these grants of funds should be shown to be necessary to the maintenance of our national security if Congress was to appropriate them. It was thus the gravity of the Soviet threat to our national security which was determinative in the approval by Congress of the Foreign Assistance Act.

Why, then, was the decision taken to concentrate on economic rather than military measures to meet the Soviet aggression which was even then not only imminent but actual? The proclamation of the Truman Doctrine in the early days of 1947 had been well received by the American public. Yet it was a shock, too; for the public had not been "sold" on the policy by any sort of educational campaign or advance "build-up." Somewhat like the much more drastic decision

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the Senate Foreign Relations Committee (*op. cit.*, pp. 1–74) and in his confidential statement and those of other governmental officials to the Harriman Committee.

[9] Indeed, the ousting of Premier Ferenc Nagy of Hungary by a Communist coup d'état and the arrest of Nikolai Petkov, the oppositionist leader in Bulgaria (later to be executed), coincided almost exactly with Marshall's speech.

[10] Actually some 20 per cent of the funds appropriated were to be made as loans rather than as grants. This left the greater part of the funds appropriated to be given to participating countries as outright grants, i.e., gifts.

some three years later to enter the war in Korea in order to stop Soviet aggression there, the decision with respect to aid to Turkey and Greece was made in the face of an emergency which brooked no delay.

Almost at once, however, there began to be voices calling for a more "constructive" approach to the problem of stopping the expansion of Soviet Russia.[11] These voices advanced the argument that to oppose expansion by military means alone was a "negative" approach. It was argued that ideas could not be stopped simply by bayonets, nor even by atomic bombs. A "positive program for democracy" was demanded.[12] The "Marshall Plan," first tentatively launched by Dean Acheson in a speech in Mississippi, on May 8, 1947, and then formally proposed by Secretary Marshall at Harvard on June 6, was an attempt to "soften" the effect both domestically and internationally of the Truman Doctrine. Simultaneously, an effort was made to "head off" objections to the plan and attract wide public support for it.

In pursuance of shifting the emphasis in our foreign policy away from the military and toward the economic, while also building up nonpartisan support, President Truman on June 22, 1947, appointed a committee of nineteen to serve under the chairmanship of Secretary of Commerce Harriman "to determine the facts with respect to the character and quantities of United States resources available for economic assistance and on the relation between this assistance and our domestic economy." This committee, reporting in November, 1947, recommended a program of some twelve to seventeen billion dollars of economic aid for Europe as being within the economic capabilities of the United States and probably sufficient for the job.

In the meantime British Foreign Minister Bevin had seized the opportunity afforded by Secretary Marshall's speech at Harvard and on June 13 proposed that a European conference should be held in order to ascertain what Europe could do for itself and what economic aid would be necessary from the United States. There was no reference to stopping communism or to Soviet aggression in Bevin's call for action. Indeed, Soviet Russia and her satellites were invited to participate in the conference and in the movement toward European economic cooperation.

It is not entirely clear whether the move to invite Soviet participation was primarily of European or of American motivation. Certainly the United States government did not formally object. It is possible that some European countries were so fearful of Soviet Russia that they might have been relucant to accept United States aid to co-operate for economic recovery without having asked the Russians and their client nations to participate. Certainly the invitation to Soviet Russia represented a crucial risk, if a calculated one. If the Kremlin had accepted, the Marshall Plan would have in effect been stopped before it was ever started.

It is extremely doubtful whether the Republican-controlled Eightieth Con-

[11] This sentiment is widely reflected in newspaper articles and editorial comment which both preceded and followed the speech of Secretary Marshall on June 5, 1947. See the dispatch by James Reston in the *New York Times* of May 9, 1947, and the article by Anne O'Hare McCormick in the same newspaper on June 7.

[12] Undersecretary of State Acheson is generally credited with leading the shift away from stopping Soviet aggression by military means to the policy of strengthening the countries of Europe by economic aid, in the hope that domestic communism in these countries could thus be kept down without actual military aid.

gress, or indeed any United States Congress, would ever have appropriated funds both for military aid to Turkey and Greece against Russia and at the same time for economic aid to build up the war potential of Soviet Russia and her satellites. It is certain that if the Soviet Union had participated in the Marshall Plan, sabotage of the plan would have been the main reason for such participation. Even if Congress had appropriated funds, they would have been worse than useless.[13]

Yet by the refusal to allow the Soviet Empire to participate, the Kremlin threw away what seems a golden opportunity either to have prevented the plan from being put into operation or to have sabotaged it in the unlikely event that funds would have been appropriated for it by Congress. It is perhaps idle to speculate on the reasons for the Soviet decision. Apparently, the Soviet government was even more fearful of the risk which would be incurred in allowing contact between United States representatives and the representatives of the satellite countries than was the government of the United States of the risk that the plan would be sabotaged by Soviet participation.

II

There were certainly other purposes which the act was intended to serve, apart from stopping the spread of communism in Europe. The act was also intended to further the economic recovery of Europe from the ravages of war, to promote financial and fiscal stability, to further the economic integration of Europe, to encourage the removal of barriers to international trade, to enlarge the volume of international trade, and to increase production and employment at home and abroad.[14]

Aside from these purposes, as stated in the act, there were other motives for passing the act. One of the more dubious arguments urgently offered for the passage of the act was the maintenance and even the expansion of the volume of United States exports, which without the act, it was declared, could be expected to be drastically curtailed with catastrophic results to our economy.[15]

The removal of trade barriers became one of the purposes of the act which was most vigorously pushed, perhaps because of the great enthusiasm for this goal by Mr. Hoffman, the first administrator of the act. This was likewise a continuation of State Department policy, which followed the Hull tradition with patient fidelity in the face of international changes in the domestic economic

[13] Worse than useless, since whatever funds Soviet Russia and her satellites received from the United States would have helped just so much in building up Soviet military might.

[14] Public Law 472 (80th Cong., 2d sess.) (S. 2202), c. 169.

[15] It was and still is widely believed in Europe that this was the major reason why Congress passed the act. Soviet propaganda played heavily on this theme as an explanation for the motivation of United States economic aid to Europe. The Russians claimed that this subsidization of United States exports represented a desperate effort to prevent the inevitable depression which was soon to engulf American capitalism. The weakness of this "Support United States exports at all costs!" argument is illustrated by the fact that the shrinkage of United States exports to Europe in 1949 and 1950, as Europe turned to more normal sources of supply, caused no catastrophic fall in the demand for the products of our economy. This argument about the maintenance of United States exports through the act did indeed have some effect in rallying congressmen from the states in which cotton, tobacco, and dried and fresh fruits were in actual or potential surplus in support of appropriations for the act. Both tobacco and fresh and dried fruits were to give the administrators of the act many a bad moment when the purchase of these commodities for the European market was urged in competition with Greek and Turkish tobacco and dried fruits.

and political organization of the national economies throughout the world and which made the policy ever more difficult to implement effectively.

It is important to note that these economic goals came to be far more frequently mentioned than the political and military purpose of stopping communism during the first two years of the operation of the act.[16] The emphasis on the economic purposes rather than on political and military purposes was due to three basic reasons. The first reason was that the economic purposes of the act were considered to be the *means* by which the politico-military goal of stopping the spread of communism was to be made possible. By increasing industrial and agricultural production, by attaining financial monetary and fiscal stability, by integrating the economic life of western Europe, and by removing trade barriers, economic prosperity was to be attained and the standard of living raised. In this way the threat of the overthrow of European governments by the Communists would be countered. Since these economic goals were considered to be the means by which the politico-military goal was to be attained, it was considered unnecessary to stress the latter.

Second, there always was a well-grounded fear that our economic aid would be resented by Europeans if it involved intervention in the internal affairs of European nations. There was, indeed, some ground for this concern. There had been in the Harriman Committee, in Congress, and in the press a substantial demand from the more conservative elements that United States aid be made contingent upon no further extension of socialism in Europe,[17] or at least that guaranties be given that United States aid would not be used for such purposes. Although this did not become United States policy, the fear that too much harping on the "Stop Communism" purpose of the act would be interpreted as political interference was a factor of importance.

Third, there was one current of opinion among those responsible for carrying out the purposes of the act which believed that the goal of stopping communism might be achieved entirely by peaceful means. This current of opinion was that the Russians should not be unnecessarily irritated by emphasis on the "Stop Communism" theme. It was argued that, if the economic goals were attained, communism would be stopped, unless in the meantime relations between the United States and Russia had been exacerbated by insistence upon the inevitability of conflict between the two countries.

In part, this delicacy about emphasizing the "Stop Communism" role of the act stemmed from a failure to understand the nature of the Soviet regime. At this time there were still those who accepted the argument that Soviet aggression was basically caused by the Soviet belief that capitalistic countries were trying to "encircle" the Russian sphere. This encirclement, so it was said, was in preparation for organizing an attack on the Soviet regime from western Europe. The fact that this made little sense in the light of the destruction of German and Japanese military power and in the light of the military impotence of western Europe did not prevent

[16] Great care was taken by ECA to insure that United States economic aid should not be used for military purposes. The greatest effort had to be made to prevent counterpart funds from being so used. Since the Korean war, however, counterpart funds may be used for military purposes.

[17] A majority of the Harriman Committee rejected this point of view, and it did not become part of the act.

some people from taking this Soviet "belief" seriously. The delicacy about emphasizing the "Stop Communism" aspect of ECA was founded also to a large degree upon the belief that communism could triumph only in a country in which economic conditions were so intolerable for the masses that they would choose communism as an alternative to their misery.

Actually the masses of no country have ever chosen communism in the sense of choosing by means of a free vote.[18] In like manner, the people of no country which has ever been seized by Communists have ever had the opportunity to retain or reject Communist rule through a free vote.

It is quite true that in a country with a non-Communist government bad economic conditions *would* facilitate the overthrow of the existing government and the establishment of a Communist-dominated regime. There is a general failure to realize what might be called the reciprocal of this proposition. ***In a country on which communism has already been imposed by force, anything which is done to improve economic conditions in that country will inevitably strengthen the grip of communism.***

Thus, no amount of economic aid which the United States might have given Czechoslovakia, in addition to the aid, principally UNRRA, which was given, would have prevented Czechoslovakia from being seized by the Russians, any more than such economic aid would have had any effect in keeping Poland out of Soviet hands.[19] Any economic aid rendered to Czechoslovakia, to Poland, or to any other Soviet satellite since the seizure of these countries strengthens their totalitarian regimes.

This, of course, is not to maintain that economic conditions in a country, whether good or bad, are the main determinants of whether a country will "go Communist."[20] There seems little likelihood that any important country in the world would "go Communist" at the present time without massive military aid from Soviet Russia or her satellites. The coming to power of communism thus depends primarily upon military force exerted from an already existing foreign center of power. Economic conditions within a country usually only determine how much military force must be exerted and whether the risk of exerting this force is worth taking.

No one can say with any assurance whether economic aid from the United States to a country which has once been occupied by a Communist regime would increase or decrease the likelihood of such a Communist regime "going Titoist." Here the determining factor is likely to be whether the potential "Tito" has an army and police which are willing and able to protect such a dictator who aspires to strike out on his own against the big boss in the Kremlin.[21]

[18] Even the Communists would not argue that this could happen, since they contend that the masses would never have a chance for a free vote and that consequently only by the revolutionary dictatorship of the proletariat could a Communist regime be attained.

[19] The circumstance that the seizure of power was carried out primarily by Czechs and Poles who were agents of Soviet Russia rather than directly by Soviet troops is only a detail. It was the presence of Soviet troops in these countries or on their borders which was determinative.

[20] In the current world, "communism" has lost most of its original meaning and simply stands for the Soviet totalitarian system.

[21] This dilemma confronts us in our relations with Mao Tse-tung's Communist regime in China. Without our economic aid, he may be unable to organize China either in the interests of his own power or those of Stalin. With our economic aid, his regime would be greatly strengthened. The unanswerable question is: Strengthened to our advantage and against the Russians or vice versa?

It would be unfair to ECA policy to claim that in effect economic aid furnished under the act could never do any more than grow wool on the western European sheep for the Soviet Russian shearer to clip at his convenience and leisure. Since the United States had the atomic bomb, and so long as the Russians did not, the Soviet government could be expected to fear the risk of attempting an undisguised military conquest of western Europe. Consequently, whatever could be done to prevent Soviet Russia from successfully *disguising* a military conquest could be accounted of real effect in preventing such a conquest.

It is very nearly a certainty that both Italy and France could not have been prevented from falling into Communist hands if it had not been for ECA aid to Europe in 1948.[22] No doubt the almost invariable formula for Communist seizure of power would have been followed. In an economic crisis, Communist participation in the government would have been the alternative to outright revolutionary disorders. If Communist participation had been refused and revolution had broken out, Soviet intervention, open or covert, would have been almost certain. It is far more likely that Communists would in fact have been taken into the Italian and French governments with other "democratic elements."[23]

Such a Communist triumph would not have happened because economic conditions had become so bad that the Italian and French peoples would have chosen communism as a lesser evil. *Communist triumph would have come because no other government could have maintained itself in power under the circumstances. No government could have maintained itself in power without the use of the unlimited terror which only totalitarian regimes will employ. Consequently, confidence in the ability of a non-Communist government to maintain itself in power would have been lost, and throughout the population the fear of Communist vengeance after success would have begun to have a critical effect.*

Under such circumstances, Russian intervention could have stopped far short of outright military invasion and still have been quite effective. The realization that at the very least Soviet munitions would be available if it came to street fighting, that if a De Gaulle or an Italian counterpart tried to stop the setting-up of Communist-dominated governments, Soviet intervention could be made to appear no worse than taking sides in a civil war—all these would have enormously facilitated the conquest of Europe by Soviet Russia by means short of a "full-dress" invasion.

Add to this the realization of every western European that if he opposes communism in any way he is extremely likely to pay for it with his blood or that of his family on the day of Communist victory. If he aids communism, nothing desperately serious will happen to him even while non-Communist governments remain in power. It was this which led to the practice in France of one member of a family joining the Communist party by agreement with his relatives, in the hope of giving the members of his family some chance for protection against "The Day."

[22] All-out military intervention by the United States might have eventually liberated western Europe from Soviet occupation. It could not have prevented the occupation. The rest of Europe could not have remained non-Communist if France and Italy had fallen. Even the survival of Britain would have been more than questionable.

[23] The outcome of such a coalition is demonstrated by the fate of Masaryk in Czechoslovakia and Petkov in Bulgaria. Nagy in Hungary and Mikolajczyk in Poland were fortunate enough to escape with their lives after their experience with such coalitions, but this is merely a difference in detail.

A Communist government, once in power, supported by its own secret police and by Russian bayonets, need have little fear of the economic misery of the populace. The rule does not work in reverse for the non-Communist governments of Europe, for they can rely neither on unlimited terror nor upon American bayonets to keep them in power against anything which can be represented as a "popular" uprising. Thus, in retrospect, the bald statement can be made that in 1948 ECA did save Europe from Communist occupation, since in the face of the United States monopoly of atomic weapons and possession of a vast industrial potential for war the Kremlin did not dare risk outright invasion.

The strength of the Communist party in western Europe has steadily diminished since ECA aid began. The ECA program had just barely got under way when the Italian election of 1948 took place. It has been pointed out that United States economic aid was relied upon heavily by the non-Communist parties in that electoral campaign and undoubtedly was a major factor in preventing a Communist victory. As the result of that election the Communists still hold 200 out of 914 seats in parliament. Even though Communist influence among the electorate has fallen much below what it was in 1948, the Communist party is still a factor to be reckoned with in Italy.

In France, Communists hold 167 of 618 seats in the National Assembly. The influence of the Communist party has declined even more since the inauguration of the ECA program than in Italy, yet the Communist party still plays a substantial role, particularly in accentuating the chronic political instability in France.

In Great Britain, western Germany, the Netherlands, Belgium, Sweden, Denmark, and Norway the small parliamentary representation of the Communist party has been reduced in every election which has been held since the beginning of ECA.[24] The waning of Communist strength with the conjunctural upsurge in the economy which accompanied two years of ECA aid is thus an easily demonstrated fact.

III

What is the positive evidence that ECA was responsible for the economic conditions such that the Communist bid for power was defeated? How was this accomplished by ECA, if it can be demonstrated that it was accomplished?

In one sense, at least, the evidence is overwhelming and can be simply stated. By the time of the outbreak of the Korean war in 1950, industrial production in western Europe had recovered to around 130 per cent of the prewar level.[25] Agricultural production had attained prewar levels.[26] Intra-European trade had risen some 15–20 per cent above prewar levels.[27]

[24] On this point see also the Associated Press dispatch of September 23 (*New York Times*, September 24, 1950, p. 18).

[25] "Recovery Guides, Participating Countries, Division of Reports and Statistics, Economic Cooperation Administration, August 1950, No. 15," p. v, estimates industrial production during the second quarter of 1950 at 122 per cent of 1938. No precise statistics on aggregate industrial production for all participating countries exist. From repeated comparison of indexes for individual countries with ECA aggregate estimates, I believe that ECA estimates, if they are in error, err in minimizing the extent of the increase in industrial production.

[26] After allowing for population increase, agricultural production on a per capita basis was perhaps still some 8 or 10 per cent below prewar.

[27] "Recovery Guides," p. ii, estimates intra-European trade during the first half of 1950 at 115 per cent of the 1938 rate.

Financial and monetary stability had been largely achieved. In no Marshall Plan country was there any longer imminent danger of hyperinflation or a collapse of external currency values. Instead, prices had been substantially stabilized; and national budgets, where not balanced, had been brought under control.[28]

The balance of payments of western Europe with the rest of the world and even with the United States which had presented such a bleak picture in 1948, when the Marshall Plan got under way, gave substantial promise by 1950 of coming surprisingly near to a balance even with the dollar area by 1952–53. Exports from participating countries during the first half of 1950 were at a rate of 20 per cent above prewar. During this same period the gold and dollar reserves of these countries increased by 1.1 billion dollars.[29] The "dollar gap" was being closed largely by a diminution of United States exports to Europe rather than by an increase of imports into the United States from Europe.[30] Participating countries were returning to more normal sources of supply for their imports, and they were selling their exports primarily in markets in which they did not have to meet the competition of United States industry in its home market. This progress toward an equilibrium in the balance of payments of participating countries was astounding to those who had dealt most intimately with the problem in the early days of ECA.

Moreover, the general standard of living in Europe had improved immeasurably above what it had been in 1947, when western Europe had not yet swung into the rhythm of economic recovery and was suffering from the bad crops and shortages of coal aggravated by the very severe winter of 1946–47. Throughout western Europe rationing of consumer goods had almost wholly disappeared by the summer of 1950. Gone was the "cigarettes–nylons–chocolate-bar–economy" of the years immediately following the war. Both the black market in goods and the black market in currencies had shrunk to negligible proportions. Trains were running on time; tourists (many more of them Europeans even than Americans) swarmed over the Continent. Building construction, from the rebuilding of bombed-out railway stations and the erection of giant hydroelectric plants to the building of dance pavilions and beach resorts, could be seen everywhere.

Congress and the public in general had visualized ECA as designed to aid Europe in repairing the ravages of war and in attaining prewar levels in standard of living. In spite of the probably justifiable feeling among lower-income groups, particularly in France and Italy,[31] that they had not participated

[28] Indeed, both in Italy and in western Germany the charge has been made that the monetary and credit policy which has been followed has been so stringent as to be downright deflationary. The ECA representative in Italy has formally made such a charge.

[29] "Recovery Guides," pp. ii, iii, iv.

[30] During the month of August, 1950, imports into the United States exceeded exports for the first time in thirteen years. As a result of the Korean crisis the "dollar gap" began to close almost at once. How much of this closing was temporary in nature and how much permanent it is difficult to say. The trend, however, was unmistakably under way before the Korean war.

[31] This feeling was particularly acute among laborers in small industries and was shared by the proprietors of these industries. Since they lacked capital, they were often unable either to supply local currency to pay for imported modern machinery or to purchase the machinery even if it was available out of domestic production. The notoriously inefficient systems of taxation in France and Italy rendered wholesale evasion of taxes by merchants, farmers, and industrialists feasible. This in

adequately in the benefits of ECA aid, the evidence was plain that western Europe was no longer the land of a people cold, hungry, and war-ravaged. Recovery to prewar levels and much more than recovery was an accomplished fact. To the extent that this recovery had been dependent upon American aid, ECA had done in two years what Congress, the experts, and the public in general had expected would take at least four. By any standards these economic gains were exceedingly impressive.

How had ECA done this? Primarily through keeping the pipe lines from the United States to Europe filled with food, livestock feed, fertilizer, fuel, and raw materials instead of allowing the flow of these pipe lines to diminish to the trickle that could be paid for at that time out of western Europe's own resources. It has sometimes been argued that ECA aid could not have had much basic effect upon European economic recovery because it represented only temporary aid as evidenced by the character of the commodities furnished to Europe. It has been argued that a far higher percentage of ECA aid should have been in the form of capital equipment to improve industrial and agricultural production instead of in the form of so-called "relief goods."

There is little validity in this criticism. It would have been nonsense for the United States to have shipped machinery to Europe which Europe could produce more cheaply. A great deal of machinery was, in fact, shipped to Europe under ECA financial aid, but by far the greater portion of the very substantial amount of equipment added to the capital inventory of western Europe was produced in Europe. It could be produced because of the food, fuel, raw materials, and the like which were essential to the production of this machinery in Europe and which ECA made available out of the resources of the United States.

IV

The very degree of success which ECA has had in stopping communism in Europe leaves us with a most difficult problem on our hands. Once we have departed from the basic principle of international trade, that nations obtain goods and services only by the exchange of their own goods and services, we are adrift on an as yet quite inadequately charted economic sea. When is a country to be given commodities and services beyond what it can earn by exchange? What is the measure of how much unrequited economic aid is to be given?

In the case of ECA aid to Europe, it has been pointed out that the crucial argument for economic aid was "stopping communism." Are we henceforth to give economic aid to every country whenever the Communist danger is invoked? The test of how much economic aid each country in Europe was to have was originally decided by ECA primarily upon the basis of the current deficit in the balance of payments of each country. The amount of the deficit in the balance of payments of any country is, however, a function of numerous factors, including the domestic monetary and fiscal policy of the country, its capital investment program, and the level of standard of living which the government of the country attempts to retain or attain. Thus, to put the matter crudely, the higher the standard of living which a country threatened with a worsening of its balance of payments attempts to attain, *ceteris paribus*, the greater the deficit in

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turn led both to failure of investment to occur at as high a rate as would otherwise have been feasible and to a perpetuation of undue inequality in income distribution.

the balance of payments. The temptation for a national government to allow consumer incomes to rise and capital investments to increase and then to shout "The Communists are coming!" when the balance of payments gets out of equilibrium is bound to be difficult to resist. This temptation is far more powerful today than it would have been in the last century, because almost all governments have been compelled to accept a greater or less degree of responsibility for all aspects of the national economy, epitomized in the standard of living.

This problem takes on increased urgency now that President Truman in his speech of October 17, 1950, has again proclaimed the intention of the United States to aid the nations of Asia to keep themselves free of Soviet domination and to improve their standard of living. However, this economic aid from the United States was already widely taken for granted in Asia. This becomes particularly evident whenever the matter is discussed with Indians. As one example, the *New York Times* correspondent in India, Robert Trumbull, reporting on the meeting of the Institute of Pacific Relations, under a Lucknow dateline of October 10, 1950, states: "One Indian delegate, expressing a popular view in this country, told the meeting that since the alternative to economic rehabilitation might be Communism, the Indians had only to wait and United States dollars would fall in their laps." At the same time the fear that their recently won sovereignty might be jeopardized by the acceptance of economic aid from the United States was expressed. There was, nevertheless, also reflected some feeling that the United States was being unreasonably dilatory in implementing its policy of economic imperialism at a time when India was so acutely short of dollars. The state of public opinion reflected at the Lucknow meeting is one which is apparently widely held throughout Asia.

Our experience in the Philippines underlines the difficulties of this problem. A large proportion of the hundreds of millions of dollars of United States aid annually sent to the Philippines since the war seems to have been wasted. Inflation, enlarged imports of luxury goods, and outright corruption have tended to nullify the economic benefits of our aid. Resentment against the United States because of the failure of the economic aid we have furnished to have the desired results seems to have been widespread.[32]

The problem of when, if ever, aid is to be stopped is likewise a difficult one. Thus, during the current year substantially more than the dollar equivalent of ECA aid to the United Kingdom has been added to the British gold reserve. There is no doubt that it is in our national interest to have the British gold reserve increase still further. Are we, however, to embrace the general principle of extending economic aid to build up national gold reserves to desired levels? Western Europe as a whole is, at least temporarily, rapidly closing the "dollar gap." Certain countries (Italy, Greece, and Austria, for example) are nevertheless likely to be left with substantial deficits in their dollar balance of payments. Is the United States to continue dollar aid to these countries while other participating countries in western Europe as a whole are earning a dollar surplus?

Now that we are embarking on direct military aid as a necessary part of the program to stop communism, are all forms of this aid to be in addition to eco-

[32] See also the report of the Bell Economic Survey Mission to the Philippines (*New York Times*, October 29, 1950).

nomic aid? The French government, for example, insists that arms, raw materials, and machinery essential to their rearmament program be furnished by the United States. The French government also insists that a sum of some hundreds of millions of additional dollars be furnished as a means of helping the French government to balance its domestic fiscal budget. Is this to be in addition to ECA aid? Once more the question of what the standard of measurement by which economic aid needed is to be measured arises with all possible sharpness. Only the generalized answer that national recipients of economic aid afford extraordinarily difficult problems in weaning can yet be given.

In spite, then, of the great measure of success which ECA has had in stopping communism in Europe, the balance sheet shows that we have assumed immense and as yet inadequately delimited liabilities. In the face of the grave danger posed by the Soviet policy of unlimited aggression we have no choice but to make the gigantic national economic effort required to meet this threat. There can be no doubt of the capability of our economy to meet the essential portion of the unprecedented demands which are now made upon it. This will be so, however, only if these demands are rigidly screened and the output of our economy rationed to supply only those demands the satisfaction of which is absolutely necessary to our national security. There is substantial danger that by extending in time and in space our policy of economic aid to stop communism we may be, particularly in Asia, assuming the labor of Sisyphus.

A MULTIPLE-COUNTRY THEORY OF INCOME TRANSFERS

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NINE years ago I presented in this *Journal* a paper dealing with the effects of income transfers between countries.[1] In some respects the paper was simply a reconsideration of the controversy between Keynes and Ohlin concerning the effects of German reparations after the first World War;[2] and, like the Keynes-Ohlin discussion, my own contribution to the subject was limited to a simplified model consisting of only two countries. I now propose to investigate the same problem under somewhat more general conditions. Assuming that the world economy consists of n countries, I shall attempt to show how a transfer of money income from one of these countries to another influences the level of output and the balance of payments of each of the n countries. Repercussions of the transfer upon nonparticipating countries will thus be taken into account, along with the direct and indirect effects upon the paying and receiving countries themselves. Before discussing the n-country model, however, it may be useful to summarize briefly the principal conclusions of my earlier investigation of the two-country model.

I

A transfer of money income between countries is unique in at least one respect: unlike other disturbances in international trade, such a transfer brings about a shift in purchasing power which is not associated with movements of prices or with movements of output and employment. In other words, even if prices and the volume of output remain constant in both countries, money income nevertheless falls in the paying country, as a result of the transfer, and rises by the same amount in the receiving country. The shift of purchasing power, in turn, affects each country's balance of payments. In the paying country, where money income has fallen, the demand for imports tends to decline; and in the receiving country, where money income has risen, the demand for imports rises. An income transfer thus has a tendency, even before price movements or movements of output occur, to increase the exports and reduce the imports of the paying country and thereby to initiate the "real" transfer of goods and services which is necessary to restore equilibrium in the balance of payments between the two countries. The question at issue in my earlier paper was whether the improvement brought about in the paying country's balance of payments is likely to be greater than, equal to, or less than the amount of the transfer itself. In other

[1] L. A. Metzler, "The Transfer Problem Reconsidered," *Journal of Political Economy*, L (June, 1942), 397–414.

[2] J. M. Keynes, "The German Transfer Problem," *Economic Journal*, XXXIX (March, 1929), 1–7; B. Ohlin, "The Reparation Problem: A Discussion. I. Transfer Difficulties, Real and Imagined," *Economic Journal*, XXXIX (June, 1929), 172–78; J. M. Keynes, "The Reparation Problem: A Discussion. II. Rejoinder," *Economic Journal*, XXXIX (June, 1929), 179–82; B. Ohlin, "Mr. Keynes' Views on the Transfer Problem. II. A Rejoinder," *Economic Journal*, XXXIX (September, 1929), 400–404; J. M. Keynes, "Mr. Keynes' Views on the Transfer Problem. III. A Reply," *Economic Journal*, XXXIX (September, 1929), 404–8.

words, does the shift of purchasing power constitute a complete, or only a partial, explanation of the transfer process?

Paradoxically, the answer to this question depends less upon the primary shift in purchasing power than upon its secondary repercussions; it was with respect to these secondary repercussions that my investigation of the transfer mechanism differed from the investigations of Keynes, Ohlin, and others. In the Keynes-Ohlin controversy and in most other interwar contributions to the subject the secondary repercussions were assumed to take the form of movements of prices and money costs, and the principal emphasis was accordingly placed upon changes in the terms of trade. In my own investigation, on the other hand, prices and money costs were assumed to remain constant. Hence discrepancies between supply and demand affected output and employment rather than the terms of trade.[3] The movements of output and employment, in turn, influenced each country's balance of payments, the exact changes being dependent upon the extent of the movements in income and upon the marginal propensities to import. The basic problem of my earlier paper was whether such income-induced movements in the volume and value of international trade tended automatically to restore equilibrium or whether a discrepancy between supply and demand in the international markets remained, even after all secondary repercussions of the transfer upon output and employment had been taken into account.

[3] Whether the one or the other of these two contrasting assumptions is the more realistic is a question which is exceedingly difficult to answer. The answer depends, in part, upon institutional factors, such as the flexibility or rigidity of wages; it also depends, to some extent, upon problems of economic theory, such as the consistency or inconsistency of the full-employment system. But these are issues which I do not wish to discuss here.

In order to isolate the effects of changes in output and employment from the effects of price changes, an extremely rigid model was considered in which the money demand for imports in each country was assumed to depend only upon the level of money income. Factor prices and exchange rates were assumed to remain constant, and all goods and services were assumed to be produced at constant-supply prices, so that no changes in the pattern of relative prices resulted from the shifts in demand.

If induced movements in output are allowed for, the effects of the money transfer upon purchasing power in the two countries become quite complex. It is no longer true, as was so frequently supposed in the interwar discussion of the transfer mechanism, that, with given prices, the purchasing power of the paying country necessarily falls by exactly the amount of the transfer, while that of the receiving country rises by the same amount. Indeed, it is not even clear that the paying country's purchasing power falls at all or that the purchasing power of the receiving country necessarily rises; for, in an economic system where output and employment are subject to fluctuations, the movement of purchasing power depends upon these fluctuations as well as upon the income transfer itself. In the paying country, purchasing power initially falls by exactly the amount of the transfer, just as it was assumed to do in the interwar discussion. But this primary movement is later accompanied by a series of secondary movements which tend, in part, to reinforce the primary change and, in part, to offset it. On the one hand, the initial reduction of money income tends to reduce the paying country's demand for domestic goods, and the reduced demand leads to reduced output, which tends to depress income or pur-

chasing power still further. But, on the other hand, the initial increase of income in the receiving country tends to increase the exports of the paying country; and the rise of exports increases output, employment, and income in that segment of the paying country's economy. The ultimate effect of the transfer on the paying country's income or purchasing power as a whole thus depends upon a balancing of forces; the country's income may either rise or fall, depending upon whether the stimulating effect of the rise in exports is more important or less important than the depressing effect of the transfer itself. A similar argument applies, of course, in the receiving country, where the stimulating effect of the new income receipt must be weighed against the retarding effect of a decline in exports. The final outcome is thus somewhat doubtful in both countries, so far as income effects are concerned.

Whether a given country's income rises or falls and whether the favorable movement in the paying country's balance of payments is less, or greater, than the annual income transfer depend, as I have shown in my earlier paper, upon what may be called the "propensity to spend" in each of the countries. A country's marginal propensity to spend measures the increase in demand for all goods and services, including imported, as well as domestic, goods and services, which results from a one-unit increase of income. Normally such propensities will be less than unity, i.e., a given increase of income will usually call forth a smaller increase in demand for goods and services. If this were not true, each country's income and employment would be inherently unstable, and, except for the stabilizing influence of countries with lower propensities to spend, there would be no equilibrium of income at all. In exceptional cases, however, and for rather short periods of time it is conceivable that the marginal propensity to spend of one or more countries may exceed unity without creating an unstable situation, provided that there are some countries in the world economy whose propensities to spend are small. Thus in the two-country model we may consider three possible cases with respect to propensities to spend. In the first case, which I have called the "normal" case, the marginal propensity to spend is assumed to be less than unity in each country. In the second case the marginal propensity to spend is assumed to exceed unity in the receiving country but to be less than unity in the paying. Finally, in the third case the marginal propensity to spend is assumed to be less than unity in the receiving country and greater than unity in the paying country. The fourth possible case of a marginal propensity to spend greater than unity in both countries must be rejected as incompatible with stability of income for the world economy.

All these possibilities were investigated in my previous analysis of income transfers. In the first, or normal, case it was found that, after all secondary repercussions had been taken into account, income fell in the paying country and increased in the receiving country. In other words, when the marginal propensity to spend was less than unity in each country, the secondary change in exports was not sufficient in either country to offset completely the initial effect of the transfer itself. The direction of change of income was thus the same as the direction of the primary shift of purchasing power, but the magnitude of the income movement might be either greater, or less, than the magnitude of the primary shift, depending upon the numerical values of the propensities to spend and to import

in the two countries. The balance of payments on current account, exclusive of the transfer, tended, in the normal case, to move in favor of the paying country, both through an increase of exports and through a decline of imports; but the favorable movement was not equal in magnitude to the size of the transfer, and the paying country was accordingly left with a "transfer problem."

In the second and third cases, which I regarded—and still regard—as somewhat unusual, the balance of payments on current account again was found to move in favor of the paying country; and in these cases the favorable movement was greater than the transfer itself. The movements of income in these exceptional cases were somewhat peculiar. When the paying country was the one with the high propensity to spend, the transfer caused income to decline in the receiving country as well as in the paying country. Under these circumstances, the depression in the paying country was found to be so great that the receiving country, on balance, was affected adversely by the transfer;[4] in other words, the decline in the receiving country's exports was so large that it more than offset the stimulating effect in the receiving country of the transfer itself. When the receiving country was the one with the high propensity to spend, on the other hand, the final effect of the transfer was a general expansion of income in both countries. Receipt of the transfer then brought about a large secondary increase in the receiving country's demand for goods and services, including the demand for imports as well as the demand for domestic goods. As a result, the exports of the paying country increased so much that, on balance, that country's income rose despite the initial depressing effect of the transfer payment. In the exceptional case in which the receiving country had a propensity to spend exceeding unity, the secondary rise of exports from the paying country thus overbalanced the transfer, and income tended to rise in that country as well as in the receiving country.

If one of the two countries had a propensity to spend greater than unity, the final movements of income throughout the world economy were thus found to be dominated by the initial effect of the transfer in this unstable economy. When the paying country was the unstable one, income fell in both countries; and when the receiving country was the unstable one, income rose in both. But, regardless of whether incomes of the two countries increased or decreased, the balance of payments on current account, exclusive of the transfer, moved in favor of the paying country, and, as long as one of the two propensities to spend exceeded unity, the favorable movement in the balance of payments was greater than the annual transfer. In other words, if the paying country's imports increased as well as its exports because of an all-round increase in world income, the increase in exports was found to exceed the increase in imports by more than the amount of the transfer. And if both exports and imports of the paying country declined because of an all-round reduction of world income, the reduction of imports exceeded the reduction of exports by more than the amount of the transfer.

The circumstances, then, in which the

[4] This possibility corresponds to an argument sometimes advanced during the period after the first World War against the payment of German reparations. Thus it was said that the reparations payments would cause a world-wide depression. According to this argument, the depression would originate in Germany, as a consequence of the collection of the reparations sums, and would spread from Germany to the Allied countries through reduction in the latter's exports to Germany.

full "real" transfer of goods and services could be brought about by the primary movement in purchasing power and the secondary movement of output were the somewhat unusual circumstances in which the propensity to spend exceeded unity in one of the two countries. In the normal case, in which the propensities to spend were less than unity in both countries, my examination of the fluctuating-employment model showed that the favorable movement in the paying country's balance of payments would be less than the annual transfer. When secondary as well as primary movements of income were taken into account, in other words, the transfer of purchasing power was found to be inadequate, except under unusual conditions, to bring about the real transfer of goods and services required to restore equilibrium in the balance of payments.[5] These results for the two-country model are summarized in Table 1, which is adapted from one of the tables in my earlier paper.

[5] Metzler, *op. cit.*, pp. 412–14.

It is apparent from Table 1 that, if all propensities to spend are assumed to be less than unity—and I believe this will usually be true—the transfer of purchasing power and the resulting secondary changes in income and employment cannot be regarded as a complete explanation of the transfer process. The paying country, which initially has a deficit in its balance of payments, will usually be left with a deficit, albeit a somewhat smaller one, even after all secondary movements in its exports and imports have taken place. With this principal conclusion of my earlier paper in mind, I turn now to a consideration of the transfer process in an economic system consisting of n countries.

TABLE 1

SUMMARY OF EFFECTS OF INCOME TRANSFER IN THE TWO-COUNTRY MODEL

	Normal Case: Propensity To Spend Less than Unity in Each Country	First Special Case: Propensity To Spend Greater than Unity in Receiving Country	Second Special Case: Propensity To Spend Greater than Unity in Paying Country
Income of paying country	Falls	Rises	Falls
Income of receiving country	Rises	Rises	Falls
Paying country's balance of payments on current account, exclusive of the transfer	Exports rise; imports fall; improvement in balance of payments is *less* than amount of transfer	Exports and imports both rise, but exports rise more than imports; improvement in balance of payments is *greater* than amount of transfer	Exports and imports both fall, but decline of imports is greater than decline of exports; improvement in balance of payments is *greater* than amount of transfer

II

Let $y_1, y_2, \ldots, y_n$ be the net national incomes of the n countries. As before, I assume that exchange rates, prices, and costs are all constant. With given exchange rates, the national income of all countries may be expressed in a common

currency unit, and for present purposes the currency of Country 1 will be used as the common unit of measurement. If all prices remain constant, the total demand for goods and services and the demand for imports in a given country may be regarded as functions of that country's income. Let $u_i(y_i)$ be the function which shows how the ith country's expenditure on all goods and services is related to that country's net income, y_i. The quantity $u_i(y_i)$ includes net investment expenditure as well as expenditure on consumers' goods; and it includes expenditure on imports of finished goods as well as expenditure on domestic goods. Let $m_i(y_i)$ be the expenditure on all imports of the ith country, again expressed as a function of the ith country's income. Let $m_{ji}(y_i)$ be the part of the ith country's imports which is obtained from the jth country. Then for any country we will have

$$m_i(y_i) \equiv \sum_j m_{ji}(y_i), \qquad (1)$$

where the summation is extended over all j except $j = i$. In words, equation (1) says that the ith country's propensity to import is simply the sum of its partial propensities to import from individual countries. Since each country's income, in equilibrium, is equal to its net expenditure on goods and services *plus* its exports *less* its imports, we may write down the equations for the n-country model shown in equation (2).

With constant exchange rates, costs, and prices, equations (2) are sufficient to determine the equilibrium level of income in each of the n countries. In writing down the equations, an autonomous element, τ, has been subtracted from the income of Country 1 and added to the income of Country 2. The amount τ represents an income transfer from the first country to the second. The size of τ will, of course, have a direct influence upon the incomes and the trade balances of the two countries between which the transfer takes place; and τ will also indirectly influence the incomes and trade balances of all other countries, through its effects upon their exports. Other things remaining the same, the n incomes, $y_1, y_2, \ldots, y_n$, may thus be regarded as functions of the income transfer, τ.

In order to see how the income of each country is affected by a change in the size of the income transfer, we may differentiate equations (2) with respect to τ as shown in equation (3).

$$\left.\begin{aligned}
y_1 &= u_1(y_1) - m_1(y_1) + m_{12}(y_2) + \ldots + m_{1n}(y_n) - \tau, \\
y_2 &= m_{21}(y_1) + u_2(y_2) - m_2(y_2) + \ldots + m_{2n}(y_n) + \tau, \\
&\ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots, \\
y_n &= m_{n1}(y_1) + m_{n2}(y_2) + \ldots + u_n(y_n) - m_n(y_n).
\end{aligned}\right\} \qquad (2)$$

$$\left.\begin{aligned}
(1 + m_1' - u_1')\frac{dy_1}{d\tau} - m_{12}'\frac{dy_2}{d\tau} - \ldots - m_{1n}'\frac{dy_n}{d\tau} &= -1, \\
-m_{21}'\frac{dy_1}{d\tau} + (1 + m_2' - u_2')\frac{dy_2}{d\tau} - \ldots - m_{2n}'\frac{dy_n}{d\tau} &= 1, \\
\ldots \quad \ldots \quad \ldots \quad \ldots &\ldots, \\
-m_{n1}'\frac{dy_1}{d\tau} - m_{n2}'\frac{dy_2}{d\tau} - \ldots + (1 + m_n' - u_n')\frac{dy_n}{d\tau} &= 0.
\end{aligned}\right\} \qquad (3)$$

The expression u_i' of equation (3) represents the marginal propensity of the ith country to spend; i.e., $u_i' \equiv [du_i(y_i)]/dy_i$. Similarly, m_i' is the marginal propensity to import of the ith country, which is defined as $[dm_i(y_i)]/dy_i$, and m_{ji}' is the marginal propensity of the ith country to import from the jth country, or $[dm_{ji}(y_i)]/dy_i$. Solving equations (3) for $dy_1/d\tau$, $dy_2/d\tau$, and $dy_i/d\tau$, where y_i is taken to represent the income of any country not participating in the transfer, we find

$$\left.\begin{aligned} \frac{dy_1}{d\tau} &= \frac{M_{21} - M_{11}}{M}, \\ \frac{dy_2}{d\tau} &= \frac{M_{22} - M_{12}}{M}, \\ \frac{dy_i}{d\tau} &= \frac{M_{2i} - M_{1i}}{M}, \end{aligned}\right\} \quad (4)$$

where

$$M \equiv \begin{vmatrix} 1 + m_1' - u_1' & -m_{12}' & \cdots & -m_{1n}' \\ -m_{21}' & 1 + m_2' - u_2' & \cdots & -m_{2n}' \\ \cdots & \cdots & \cdots & \cdots \\ -m_{n1}' & -m_{n2}' & \cdots & 1 + m_n' - u_n' \end{vmatrix} \quad (5)$$

and where M_{rs} is the cofactor of the element in the rth row and sth column of M.

When we attempt to evaluate equations (4) in order to see how the transfer has affected the levels of income in the paying country, the receiving country, and a nonparticipating country (Country i), we find that neither the sign of M nor that of any of the cofactors of M is unambiguous. If we place certain limitations on the values of the propensities to spend, however, the sign of M and its cofactors may readily be determined. Suppose, in particular, that we consider what I have called the "normal" case, i.e., the case in which the marginal propensity to spend is less than unity in each country. Mathematically, this means that u_1', u_2', $\ldots$, u_n' are all less than unity, and from (5) it is clear that this implies that all the elements in the principal diagonal of M are positive quantities. If the partial propensities to import, m_{ji}', are positive or zero, as they will usually be, then the off-diagonal elements of M are either negative or zero. Consider, finally, the sum of the elements in a given column of M, say the kth column. This sum is equal to

$$1 + m_k' - u_k' - \sum_j m_{jk}'.$$

But from identity (1) it is apparent that $\Sigma m_{jk}' = m_k'$, and the sum of all elements in the kth column of M is accordingly equal to $1 - u_k'$. If u_k' is less than unity, as it is here assumed to be, this sum is clearly positive. In the normal case, then, in which the propensity to spend in each country is less than unity, the determinant M has the following characteristics: (1) its off-diagonal elements are negative or zero; (2) its diagonal elements are positive; (3) the sum of the elements of each column is positive. Now I have shown elsewhere that a determinant with these characteristics is necessarily positive and that its cofactors are also positive.[6] Even this amount of information, however, is insufficient to evaluate equations (4), for the numerators of these equations all contain one term which is positive and one which is negative. The numerators of equations

[6] L. A. Metzler, "A Multiple-Region Theory of Income and Trade," *Econometrica*, XVIII (October, 1950), 329–54.

(4) must therefore be examined in more detail. By writing out the full expressions for M_{11} and M_{21}, the reader may easily verify that

$$M_{11}-M_{21}=\begin{vmatrix} 1+m'_2-m'_{12}-u'_2 & -m'_{13}-m'_{23} & \cdots & -m'_{1n}-m'_{2n} \\ -m'_{32} & 1+m'_3-u'_3 & \cdots & -m'_{3n} \\ \cdots & \cdots & \cdots & \cdots \\ -m'_{n2} & -m'_{n3} & \cdots & 1+m'_n-u'_n \end{vmatrix}. \tag{6}$$

It is apparent by inspection that, if the marginal propensities to spend, u'_k, are all less than unity, the determinant in equation (6) is an $(n-1)$th-order determinant having the same essential characteristics as M. Its off-diagonal elements are negative or zero, its diagonal elements are positive, and the sum of the elements of each column is positive. From the results of my earlier paper it follows that $M_{11}-M_{21}$ is a positive quantity. Since M is likewise positive, it is clear from equations (4) that $dy_1/d\tau$ is negative. By a similar argument it may be shown that, in the normal case, $M_{22}-M_{12}$ is positive, and $dy_2/d\tau$ is therefore positive. The sign of the third numerator of equations (4) remains indeterminate, which means that $dy_3/d\tau$ may be either positive or negative.

It may be useful, at this point, to summarize the conclusions reached thus far. Assuming that the propensity to spend is less than unity in every country, I have demonstrated that a transfer of income between one country and another in an economic system involving n countries reduces the income of the paying country while increasing that of the receiving country. This means that, in the final position of equilibrium, after allowance has been made for all secondary repercussions of the transfer, the secondary movements of exports in each country are necessarily less important than the primary movement of income associated with the transfer itself. In the paying country, for example, exports may rise as a result of higher income in other countries; but the secondary rise of exports cannot be large enough, under the conditions assumed, to offset the depressing effects of the transfer. Likewise, in the receiving country exports may decline; but, if they do, the decline in exports will be less important than the stimulating effect which the receiving country enjoys from receipt of the transfer. In short, the ultimate movement of income in both the paying and the receiving country is dominated by the primary effect. In countries which are not directly involved in the transfer, income may either rise or fall. Superficially, it would seem that countries whose exports are sold largely in the paying country would undergo a decline of income, while countries largely dependent upon the markets of the receiving country would find their incomes increasing. Although this is undoubtedly true as a first approximation, it is a proposition which, in a complex system of trade among many countries, can be neither precisely stated nor rigorously proved. The transfer, indeed, may affect nonparticipating countries in quite unexpected ways.

As far as income movements alone are concerned, it is obvious from the foregoing that, in the normal case in which the propensities to spend of all countries are less than unity, the n-country model leads to the same conclusions as the simple two-country model. Our primary interest, however, is not in the movements of income but in the movements of

each country's balance of payments. For present purposes the income movements are important only because they affect the network of international payments and receipts. The basic issues, as in the interwar discussion of the transfer mechanism, are whether the income movements in all countries will bring about an export surplus in the paying country and an import surplus in the receiving country and whether the export surplus of the former and the import surplus of the latter will be equal to, greater than, or less than the amount of the annual transfer. With respect to these balance-of-payments problems, there is no difficulty in showing that, in the normal case, the n-country model again confirms the results of the two-country model.

In a transfer involving only two countries, the exports of the paying country will normally rise, while its imports will fall, as I have indicated above; and, if each country's propensity to spend is less than unity, the export surplus achieved in this manner will be less than the amount of the annual transfer, regardless of how large the propensities to import may be. In attempting to reach similar results for the n-country model, a number of complications are encountered. We cannot be certain, for example, that the exports of the paying country will rise, as they normally do in the two-country model; for the paying country's exports depend upon the incomes of many countries which do not participate directly in the transfer, and in some of these countries income may fall as a result of the transfer. Unless the paying country is trading predominantly with the receiving country, therefore, it is impossible to say that its exports will necessarily rise. But, regardless of whether its exports rise or fall, its imports will fall, and it may readily be shown that in this manner the paying country will achieve an export surplus. Moreover, the export surplus, as in the two-country model, will be less than the amount of the annual transfer, so that a "transfer problem" remains even after all primary and secondary changes in income in all the n countries have been taken into account. In the receiving country, also, exports may either rise or fall, depending upon whether that country's foreign markets are predominantly in countries whose incomes have risen or in countries whose incomes have fallen. But in the normal case the receiving country's imports will rise regardless of what happens to its exports, and it can be shown that the final result of the changes in both exports and imports is an import surplus. And just as the export surplus of the paying country is normally smaller than the annual transfer, so also will the import surplus of the receiving country be smaller than the transfer. From this it follows that a transfer problem remains to be solved in the receiving country as well as in the paying country. In an n-country model, however, the export surplus of the paying country will not necessarily be equal, in absolute magnitude, to the import surplus of the receiving country, and the severity of the transfer problem may accordingly differ as between the two countries.

In order to demonstrate these propositions mathematically, let b_1, b_2, and b_i represent the balances of payments on current account, exclusive of the transfer, of the paying country, the receiving country, and any third country, respectively. We may then write

$$\left.\begin{aligned} b_1 &= \sum_j m_{1j}(y_j) - m_1(y_1), \\ b_2 &= \sum_j m_{2j}(y_j) - m_2(y_2), \\ b_i &= \sum_j m_{ij}(y_j) - m_i(y_i). \end{aligned}\right\} \quad (7)$$

From equations (2), however, it is apparent that equations (7) may be written in the following more convenient form:

$$\left.\begin{aligned} b_1 &= y_1 - u_1(y_1) + \tau\,, \\ b_2 &= y_2 - u_2(y_2) - \tau\,, \\ b_i &= y_i - u_i(y_i)\,. \end{aligned}\right\} \quad (8)$$

Equations (8) express the familiar proposition that each country's balance of payments on current account is equal to the difference between the value of its total output and its own expenditure on all goods and services. In order to see how the transfer influences the three balances of payments, we may differentiate equations (8) with respect to τ as follows:

$$\left.\begin{aligned} \frac{db_1}{d\tau} &= (1-u_1')\frac{dy_1}{d\tau} + 1\,, \\ \frac{db_2}{d\tau} &= (1-u_2')\frac{dy_2}{d\tau} - 1\,, \\ \frac{db_i}{d\tau} &= (1-u_i')\frac{dy_i}{d\tau}\,. \end{aligned}\right\} \quad (9)$$

Substituting in equations (9) the values of $dy_1/d\tau$, $dy_2/d\tau$, and $dy_i/d\tau$ given by equations (4), we have

$$\left.\begin{aligned} \frac{db_1}{d\tau} &= (1-u_1')\left(\frac{M_{21}-M_{11}}{M}\right) + 1\,, \\ \frac{db_2}{d\tau} &= (1-u_2')\left(\frac{M_{22}-M_{12}}{M}\right) - 1\,, \\ \frac{db_i}{d\tau} &= (1-u_i')\left(\frac{M_{2i}-M_{1i}}{M}\right). \end{aligned}\right\} \quad (10)$$

Consider, first, the change in the paying country's balance of payments, $db_1/d\tau$. The value of $db_1/d\tau$ is given in equations (10) by two terms; and, if the propensity to spend is less than unity in every country, the first of these terms is negative, while the second is positive. I have shown elsewhere,[7] however, that under these so-called "normal" conditions $M_{11}/M < 1/(1-u_1')$, and it follows that

$$\frac{M_{11}-M_{21}}{M} < \frac{1}{1-u_1'}.$$

From this inequality it is apparent that the negative term of $db_1/d\tau$ is necessarily smaller than unity in absolute value. Since the second term of $db_1/d\tau$ is equal to unity, $db_1/d\tau$ is positive and lies between the following limits:

$$0 < \frac{db_1}{d\tau} < 1\,. \quad (11)$$

In words, inequality (11) says that in the normal case the paying country's balance of payments, exclusive of the transfer, moves in a favorable direction but that the export surplus thus achieved is less than the amount of the annual income transfer. The first of equations (10) thus establishes rigorously that the movements of income induced by a shift of purchasing power will normally give the paying country an export surplus somewhat smaller than the transfer itself. And this is true regardless of the number of countries involved in the economic system; it applies equally to the n-country and to the two-country models. In short, the income movements, including secondary as well as primary movements, are normally insufficient to bring about the full "real" transfer of goods and services required to restore equilibrium in the paying country's balance of payments.

An analogous proposition applies to $db_2/d\tau$, the movement in the balance of payments, exclusive of the transfer, of the receiving country. In the receiving country, as in the paying, the balance of payments moves in the direction required to restore equilibrium; but again the size of the movement is less than the transfer itself, i.e., in the new equilibrium the receiving country has an *import* surplus which is less than the amount of the

[7] *Ibid.*

transfer. The expression in equations (10) for $db_2/d\tau$ consists of two terms, one of which is -1, while the other is positive. But the positive term may be shown to be less than unity. This conclusion follows from two inequalities. If all propensities to spend are less than unity, M_{22}/M is less than $1/(1-u_2')$, whence

$$\frac{M_{22}-M_{12}}{M}<\frac{1}{1-u_2'}.$$

From these inequalities and from equations (10) it is apparent that

$$-1<\frac{db_2}{d\tau}<0, \qquad (12)$$

which shows that the import surplus in the receiving country's balance of payments is less than the annual transfer. Again, therefore, the results in the n-country system agree with the earlier results which I obtained for a simple two-country model.

In any country not directly involved in the transfer, the balance of payments may move in either direction. From equations (9), however, it is clear that, if the propensities to spend are less than unity, the balance of payments of each of the nonparticipating countries moves in the same direction as its income. If a country's income declines as a result of the transfer, for example, its balance of payments must be more unfavorable than in the original equilibrium. Or perhaps it would be more accurate in this case to say that the country's income has declined *because* its balance of payments has deteriorated.

III

The conclusions reached thus far are valid only for the case in which the marginal propensities to spend are less than unity in all countries. Although this normal case appears to be the most probable one, it is possible, in the short run, that the propensity to spend in some of the n countries may exceed unity. In a poor country, for example, the propensity to consume will be close to unity, and if any induced investment takes place at all the country's total propensity to spend may well exceed unity. We ought, therefore, to examine the transfer mechanism under the alternative hypothesis that some of the propensities to spend are greater than unity. If all the propensities to spend exceeded unity, it is obvious intuitively that the n-country economy would be an unstable one, and in this event neither the concept of an equilibrium level of income nor the concept of equilibrium in the balance of international payments would have any meaning. Because it is beyond the powers of our present technique, this extreme case will be excluded from our investigation. If some of the propensities to spend are greater than unity, while others are less than unity, however, it is possible that the n-country system, taken as a whole, may be stable despite the inherent instability of the high-propensity countries. The latter countries, in other words, may be stabilized by low propensities to spend in other countries. I turn now to an examination of such mixed, but stable, systems.

In the mixed cases in which some of the propensities to spend are greater than unity, the results of an income transfer are difficult to predict. Mathematically, we cannot prove, as we can in the normal case, that the determinant, M, and its cofactors, M_{rs}, are all positive. If we assume that the n-country system is dynamically stable, however, the conditions which must be fulfilled to insure stability will place certain useful limitations on the basic determinant and its cofactors. In particular, I have shown

elsewhere that stability of the system requires that the determinant M and any set of its principal minors, such as M_{11}, $M_{11, 22}$, $M_{11, 22, 33}$, etc., shall all be positive.[8] From a theorem derived by Mosak[9] it follows that under these conditions the cofactors of the off-diagonal elements, such as M_{rs}, are also positive. In short, if the system is stable, M and its cofactors will have the same signs that they have in the normal case; and this is true regardless of which countries are the high-propensity countries.

To know the signs of M and its cofactors is not, in itself, sufficient to determine how an income transfer affects the national incomes and the balances of payments of the n countries. In addition, we must know the signs of the differences of some of the cofactors, such as $M_{21} - M_{11}$, $M_{22} - M_{12}$, $M_{2i} - M_{1i}$, etc. The necessary conditions of stability do not place any limitations upon the signs of such expressions, and for this reason a wide variety of results is possible. In view of the large number of possibilities, it is obviously difficult to summarize the effects of an income transfer in the exceptional cases in which some of the propensities to spend are greater than unity. Despite the difficulty, however, there is a method of approaching the problem which enables one to see the similarities between the n-country and the two-country models even in these exceptional cases. In summarizing the results obtained from the two-country model, I pointed out that under some circumstances an income transfer would result in an expansion of income in both countries, while under other circumstances the effect of the transfer would be a contraction in both countries. We may now ask whether there are similar possibilities in the more complex model involving trade among n countries. What are the circumstances, in other words, under which an income transfer would result in an expansion of income in all n countries? And what are the circumstances under which incomes in all countries would contract?

In order to answer these questions, consider, again, the determinant in equation (6) formed of the difference $M_{11} - M_{21}$ of two $(n-1)$th-order determinants. Inspection will show that in a sense this determinant may be regarded as the basic determinant, analogous to M, of a trading system involving $n-1$ countries. In particular, it is the determinant that would result if Country 1 could be withdrawn from the n-country system and if all the import demands of the other $n-1$ countries for the goods and services of Country 1 could be transferred to Country 2. More briefly, we may say that it is the basic determinant of a system in which Country 1 has been withdrawn in favor of Country 2. (Although no country will *actually* be withdrawn from the system in such a manner, it will be helpful to think of the problem as though this could be done.) Now, in order for the system involving Countries 2, 3, . . . , n to form a stable system, it is necessary, though not sufficient, that the determinant (6) be positive. If this is actually true, we may say, in a somewhat elliptical manner, that the system would be stable when Country 1 was withdrawn in favor of Country 2. But if some of the propensities to spend exceed unity, it is possible that $M_{11} - M_{21}$ may be negative even when M itself is positive and even when the n-country system as a whole is stable. If so, the system obtained by withdrawing Country 1 in favor of Coun-

[8] *Ibid.*

[9] J. L. Mosak, *General-Equilibrium Theory in International Trade* (Bloomington, Ind., 1944), pp. 49–51.

try 2 would be an unstable system despite the stability of the n-country model. The exact conditions under which such hypothetical instability may arise are difficult to formulate. It seems likely, though I have not found a rigorous proof, that the instability of an $(n-1)$-country system in which Country 1 has been withdrawn in favor of Country 2 implies that the propensity to spend of Country 2 exceeds that of Country 1. Thus, if Country 1 were a low-propensity country while Country 2 was a high-propensity country, the presence of the former country would tend to stabilize the entire system; and if Country 1 were withdrawn from the system in favor of Country 2, the resulting increase in demand for the output of an inherently unstable country might lead to instability of the system as a whole. But this conclusion is based upon intuition and not upon mathematical proof, and it may not even be correct under all circumstances.

It will now be demonstrated that *if the system is unstable when the paying country is withdrawn in favor of the receiving country, a money transfer will increase the level of income of each of the* n *countries*. In order to prove this proposition, consider again equations (4), which depict the movements of income in the paying country, the receiving country, and any third country. By hypothesis, $M_{11} - M_{21}$ is negative; this condition, indeed, is our definition of the hypothetical instability of the $(n-1)$-country system. Hence from equations (4) it follows immediately that $db_1/d\tau$ is positive, i.e., the transfer increases the income of the paying country. This means that the secondary rise in the paying country's exports is more important to that country than the depressing effect of the transfer itself; or, in other words, the secondary movement overbalances the primary disturbance.

In order to show what happens to the incomes of the other countries, we must employ the following identity, which is true for any determinant:[10]

$$MM_{11,\,2i} \equiv M_{11}M_{2i} - M_{21}M_{1i}\,. \quad (13)$$

From the conditions of stability of the n-country system and from Mosak's theorem, we know that both M and $M_{11,\,2i}$ are positive, from which it follows that

$$M_{11}M_{2i} - M_{21}M_{1i} > 0\,, \quad i \neq 1\,. \quad (14)$$

All the cofactors of M are necessarily positive, and, if M_{21} exceeds M_{11}, as it does when $M_{11} - M_{21}$ is negative, we must have

$$M_{11}M_{2i} - M_{11}M_{1i} > 0\,, \quad (15)$$

or

$$M_{2i} - M_{1i} > 0\,, \quad i \neq 1\,. \quad (16)$$

If we put $i = 2$ in (16), we have

$$M_{22} - M_{12} \equiv M\frac{dy_2}{d\tau} > 0\,, \quad (17)$$

which shows that the transfer increases the income of the receiving country. And the same is obviously true of the income of any other country, such as Country i.

I have now shown that if the hypothetical system obtained by withdrawing the paying country in favor of the receiving country is unstable, an income transfer in the actual n-country system necessarily increases the incomes of all countries. The economic rationale of this result is simple. The fact that the system would be unstable if the paying country were withdrawn means that that country has a stabilizing effect upon the world economy; in other words, its propensity to spend is low, compared with propensities to spend in other countries. For this

[10] See Maxime Bocher, *Higher Algebra* (New York, 1907), p. 33.

reason the depressing effects of the transfer in the paying country are small, while the stimulating effects in the receiving country and in the rest of the world are large. The stimulating effects thus offset the depressing effects, and income rises throughout the entire system.

Consider, next, the converse of the above situation; i.e., suppose that the income transfer causes a general contraction of all incomes of the system. Under what circumstances can this result be expected? It can easily be shown that a general contraction will occur, as a consequence of the transfer, if the propensities to spend of the various countries are such that the system is unstable when the *receiving* country is withdrawn in favor of the *paying* country. Such a situation might arise if the receiving country had a relatively low propensity to spend, while the paying country had a high propensity. Receipt of the transfer would then give only a small stimulus to income in the receiving country, whereas the depressing effects in the paying country might be substantial. Under such conditions, income would decline in all countries. This converse proposition may be proved from the original proposition simply by changing the sign of the income transfer. If a positive transfer from Country 1 to Country 2 causes all incomes to *rise*, a negative transfer will necessarily cause all incomes to fall. But a negative transfer from Country 1 to Country 2 is really a positive transfer in the opposite direction. By changing the sign of the transfer, we have thus reversed the roles of payer and receiver and proved that, *if the system is unstable when the receiving country is withdrawn in favor of the paying country, the income transfer causes incomes in all countries to decline.*

With respect to movements of income, three different possibilities have now been discussed: (1) an income transfer may reduce the income of the paying country and increase that of the receiving country, while incomes of other countries either rise or fall; (2) the transfer may increase the income of every country in the system; and (3) the transfer may result in a net decline in all incomes. The circumstances under which each of these three results will occur are summarized in Table 2. Although I do not believe that the special cases in which incomes of all countries rise or fall simultaneously are very probable, I have nevertheless presented them, along with what seems to be the most likely result, in order to indicate the rather unusual conditions in which secondary income

TABLE 2

SUMMARY OF POSSIBLE INCOME MOVEMENTS IN THE *n*-COUNTRY SYSTEM

	Normal Case: All Marginal Propensities To Spend Less than Unity	First Special Case: System Unstable when Paying Country Is Withdrawn in Favor of Receiving Country	Second Special Case: System Unstable when Receiving Country Is Withdrawn in Favor of Paying Country
Income of paying country	Falls	Rises	Falls
Income of receiving country	Rises	Rises	Falls
Income of other countries	?	Rises	Falls

movements may overbalance the primary movements.

With respect to movements of each country's balance of payments, it is impossible to present any such summary as that given in Table 2. In the normal case in which all propensities to spend are less than unity, one can predict the direction of and the limits of the balance-of-payments movement in the receiving country and the paying country. But in the two special cases even this amount of prediction is beyond the capacity of our model. The balance-of-payments movement of a given country is described in terms of its propensity to spend as well as its income movement; and in the special cases the propensity to spend of a given country may be either greater or less than unity. If the incomes of all countries rise (first special case) and if the propensity to spend of the paying country is less than unity, then it is clear from equations (4) that the balance of payments of the paying country, exclusive of the transfer, will move in a favorable direction and that the amount of such favorable movement will be larger than the transfer itself. But there is no assurance, in this event, that the receiving country will necessarily have an *un*favorable balance of payments *greater* than the transfer. A substantial part of the adjustment may be forced upon the nonparticipating countries. Similarly, if the transfer leads to a general *decline* of all incomes (second special case) and if the *receiving* country has a propensity to spend which is less than unity, it is again clear from equations (4) that the change in the receiving country's balance of payments will be larger than would be required to restore equilibrium in its international transactions. Although such possibilities as these reveal the analogy between the n-country model and the two-country model, they are not by any means the only conceivable results. It is thus apparent that when the propensity to spend exceeds unity in one or more countries, the theory presented above cannot, by itself, provide much useful information about the effects of a transfer upon the network of multilateral payments.

IV

The foregoing account of the transfer mechanism in an economic system consisting of n countries has been presented as a generalization of my earlier paper, which considered only two countries. I have examined the n-country model in some detail in order to see whether the repercussions of the transfer upon nonparticipating countries would alter the conclusions reached in my earlier and simpler model. Although the number of *possible* results is naturally increased by the increase in the number of countries, the practical conclusions to be drawn from the n-country model are substantially the same, I believe, as those to be drawn from the two-country model. Both the simple model and the more complex one have shown that, except under unusual circumstances, the income movements brought about by an income transfer will be insufficient to effect a corresponding "real" transfer of goods and services. In short, the movements of income will normally bring about only a partial adjustment of the balance of payments of the paying country and the receiving country, respectively; and this is true regardless of the number of countries in the economic system.

If the transfer of purchasing power is only a partial explanation of the process of adjustment, the question naturally arises as to how the remaining discrepancy between the international payments and the international receipts of the two

participating countries can be eliminated. Suppose, for example, that, after all income movements have been allowed for, the shifts in purchasing power account for an improvement in the paying country's balance of payments equal to 70 per cent of the annual transfer. Can we say, in this event, that 70 per cent of the adjustment of the paying country's balance of payments will take place through shifts in the demand schedules, while the remaining 30 per cent is brought about by movements in prices at home and abroad? At first glance this seems to be a reasonable conclusion, but actually it is misleading. For the price changes will themselves bring about further movements of income and employment, which tend to offset the initial income movements. In other words, the price effects and the income effects are not additive, since they react upon each other in a rather complicated manner. This means that the description of the transfer mechanism presented above is valid only if the terms of trade between countries remain relatively constant. A theory of complete adjustment is thus rather different from the theory of partial adjustment presented in this paper. But, interesting as it is, such a theory is beyond the scope of my present investigation.[11]

[11] See A. J. Brown, "Trade Balances and Exchange Stability," *Oxford Economic Papers*, No. 6 (April, 1942), pp. 66–67.

GROUP BEHAVIOR AND INTERNATIONAL TRADE

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I

THE primary tool of analysis in economics is the market. But Walker has expressed the opinion that an economics adequate for prediction and policy must include a theory of extra-market behavior.[1] Polanyi, further, has attempted to demonstrate that the emphasis on the market is likely to be misleading and that a rounded theory of social behavior would include economic drives as only one stand in a broad web of social motivation.[2] The present article is designed to suggest that, in certain situations in international trade, a useful tool of analysis may be found in a theory of group behavior at the national level. Unhappily, no such theory adequate for the task appears to have been developed. A few suggestions will be offered as to the types of variables with which such a theory should deal.

The method followed is to take the world decline in the price of wheat after 1870 and to indicate the responses to it in Great Britain, Germany, France, Italy, and Denmark. If a theory of market behavior were sufficient for prediction, it might be expected that the reduction in the price of wheat in Europe would lead to increased imports. Foreign sources of supply would be substituted for domestic. Resources engaged in the production of wheat would shift to less remunerative occupations. Some increase in wheat consumption would take place at the expense of other grains, to the extent that wheat would fall more in price than rye, oats, and barley would. Some of these changes did, in fact, occur, but the results were not uniformly of this character.

After the differences in response have been established, attention will be turned to a series of explanations dependent on nonmarket factors. None of these is completely satisfactory. What appears to be needed is a comprehensive theory of group behavior to deal with groups as large as nations—in particular, a theory which systematically makes allowances for variation in the relation among the subgroups which make up the larger entity.

I am conscious of the amateurish character of the economic history and sociology in what follows, and I am not inclined to apologize for this inevitable shortcoming. Interdisciplinary co-operation must begin with the utilization, however crude, of the products of other social sciences by practitioners in separate fields. I have greatly benefited from the assistance of experts in other fields;[3] but I have been obliged to restrict my use of their techniques, lest my special focus of interest be lost among a host of fine points.

[1] Ronald Walker, *From Economic Theory to Policy* (Chicago: University of Chicago Press, 1943), *passim*.

[2] K. Polanyi, *The Great Transformation* (New York: Rinehart, 1944), *passim*.

[3] Especially helpful have been Duncan Ballantine, John Blum, K. W. Deutsch, A. Gerschenkron, Bert F. Hoselitz, G. K. Krulee, E. E. Morison, W. W. Rostow, and J. E. Sawyer.

II

The main facts concerning the world decline in the price of wheat after the American Civil War and its causes are generally understood and accepted. The rapid spread of the American rail net work in the 1870's and 1880's made it possible to transport wheat to tidewater more cheaply and in far greater quantities than the canal system had been able to handle. A parallel development occurred in railroad construction from the Ukrainian wheat fields to Crimean ports. The technological shift from wooden to iron ships—another indirect effect of the Civil War—reduced trans-Atlantic freight rates and those to western Europe from the Crimea. The availability of demobilized manpower, untilled land, and wartime accumulations of money capital, coupled with the development of farm machinery for extensive cultivation, resulted in an expansion of the American supply, which passed the economies of production and distribution on to the consumer in Europe as cheaper wheat. In addition, the weather was favorable during the 1880's, and yields were high. The European peasant and landowner met increased competition in grain production from overseas.[4]

The difficulties of European wheat-growers were not solely caused by overseas competition. A series of bad seasons reduced yields and brought about a deterioration in quality. A Royal Commission of Inquiry, sitting from 1879 to 1882, reached the conclusion that the loss of British farm income was due primarily to untoward weather and only secondarily to foreign competition. The effects of the two causes were not unconnected. In a closed economy a short crop is at least partially compensated for, so far as farm income is concerned, by an increase in price. In an international, bi-hemispheric economy, an increase in the local price produced by a series of short crops is likely to be forestalled by imports from overseas.[5]

The view exists, however, that what hurt European agriculture was not overseas competition or any other factor peculiar to agriculture but over-all depression, lasting from 1873 to 1896. It is recognized that the price of wheat fell somewhat more than prices in general, and this is ascribed to the growth of production in the United States. This relative decline, given by one writer as only 10 per cent, is regarded as much less significant for the agricultural depression than was the general fall in prices.[6] The reasoning, however, is not persuasive in the light of price developments on, say, the Copenhagen market, which was unaffected by tariffs. Between 1873 and 1896 wheat fell in price by 53 per cent and rye by 48 per cent, as compared with a decline of 36 per cent in the *Statist*'s index of wholesale prices. And after 1873 American wheat appeared in European markets which had never before known it, including some cities, such as Trieste, which were known as export centers for European supplies.[7]

[4] See E. G. Nourse, *American Agriculture and the European Market* (New York: McGraw-Hill Book Co., 1924), Appendix A. An earlier and entirely orthodox account is furnished by Thorstein B. Veblen in "The Price of Wheat since 1867," *Journal of Political Economy*, I (December, 1892), 70–103.

[5] See Lord Ernle, *English Farming, Past and Present* (5th ed.; New York: Longmans, Green & Co., 1936), pp. 379–81; and R. C. K. Ensor, *England, 1870–1914* (Oxford: Oxford University Press, 1936), p. 116.

[6] See Einar Jensen, *Danish Agriculture: Its Economic Development* (Copenhagen: Munksgaard, 1937), pp. 192 ff. and esp. 212.

[7] *Ibid.*, statistical appendix. For a series of interesting contemporary European views see the *Report of the U.S. Commissioner of Agriculture* (1883), pp. 326–51 (quoted by Nourse, *op. cit.*, pp. 271 ff.).

The combination of weather and overseas competition, then, produced potential economic distress for the farming community in the form of short crops and low prices. The remainder of this analysis, for convenience, treats this as a question solely of prices. In this connection, some importance attaches to the question of timing. The price of wheat fell from $1.70 to $0.66 a bushel in England from 1873 to 1894, and the sharpest decline was probably that from $1.31 in 1882 to $0.90 in 1886.[8] Action to meet the collapse in the price of wheat was taken, if at all, primarily in response to this pressure. But the nature of the response and the timing differed from country to country.

III

No action was taken in Britain. The issue had already been settled some years before, in 1846, with the repeal of the Corn Laws. The decline in the world price of wheat produced an improvement in the terms of trade for the rising industrial classes and a basis for lowering, or withholding increases in, the wages of the industrial labor force. The latter, in turn, received a new batch of recruits in the form of agricultural workers displaced from the farm by the unprofitability of wheat growing.

The repeal of the Corn Laws in 1846, fourteen years after the political settlement between the landed gentry and industry and commerce in the Reform Bill, produced no immediate economic effect. The period of high farming in Britain continued uninterrupted. British agriculture in general was efficient and profitable from 1837, when the long period of distress after the Napoleonic Wars came to an end, until 1873. The American Civil War and the Crimean War had helped to postpone the effects of cheap wheat imports, but even in the 1850's there had been no significant effects of the repeal. Land under the plow in Britain reached a peak in 1872 never again attained, even in World War II.[9]

The bad summers from 1875 to 1879, the rinderpest attack of 1877, and the widespread loss of sheep to liver rot in 1879 may have convinced the farmers that their difficulties were due to the vindictiveness of nature rather than to a change in their position in the community. Landowners remained the richest class in the country for several years after the disaster of 1879. By 1886 their relative position had begun to slip.[10] No action was taken to halt the decline in farm prices or to assist the farming community.[11] The dominant group in the society—the rising industrial class—was content to have cheaper food and cheaper labor. Rents fell, young men left the farm for the town, land planted to crops shrank rapidly. The response to the

[8] Slight differences in range and timing existed in separate markets because of differing transfer costs and the accessibility of different sources of supply. In Sweden, for example, which is not covered below, the comparable decline was from $1.34 per bushel in 1881 to $0.78 in 1887. See Table II of the Appendix to the useful "Decline and Recovery of Wheat Prices," *Wheat Studies* (Food Research Institute), X, Nos. 8 and 9 (June and July, 1934), 347, which gives annual figures for a large number of countries.

[9] Roy Lewis and Angus Maude, *The English Middle Classes* (London: Phoenix House, 1949), p. 171.

[10] See Ensor, *op. cit.*, p. 117.

[11] This statement should perhaps be qualified by reference to the fair-trade agitation of the 1880's and the rise of protectionist sentiment in the 1890's under Joseph Chamberlain. Both these movements, however, were industrial in origin and sought to enlist rural support as an afterthought.

Some weight should perhaps also be given to the roles of bad weather and pestilence which delayed recognition of the importance of overseas competition. It is not certain that the reaction would have been equally passive had the country as a whole clearly understood the deep-seated nature of agriculture's troubles.

decline in the world price of wheat was to complete the liquidation of agriculture as the most powerful economic group in Britain.

IV

In Germany, France, and Italy the farmer was protected by the imposition of tariffs. In Germany the tariff on grain was enacted first in 1879, after fourteen years of free trade. Duties under this law were almost purely nominal, but rates were sharply raised in 1885 and again in 1887. The timing of tariff enactments in France and Italy was broadly similar, with the exception of the first step and with a significant difference in so far as Italy was concerned. Major increases in grain tariffs took place in Germany and France in 1885 and 1887. In Italy the first step was delayed until 1887, though the second followed more quickly in 1888.

The German situation is more properly analyzed in terms of the tariff on rye, which in the period to 1890 was identical with that on wheat. Gerschenkron makes clear that Bismarck's alliance ran not between industry and agriculture, as such, but between two powerful components of each, iron and rye.[12] Within industry the interests of the expanding steel industry were opposed to those of the fabricators of metal, who wanted cheap supplies. In this capital-intensive industry, moreover, the level of wages was relatively unimportant. In agriculture the large farms of the Junkers in eastern Germany produced rye as a cash crop for shipment to western Germany and for export. Their interest in high prices should have been opposed by the peasants of northern and western Germany, who bought grain for animal feed and had an interest in low prices. Despite this interest, however, the peasants of Germany politically followed the leadership of the landed nobility and supported tariffs on grain. Gerschenkron claims that they were deluged with propaganda and deluded by the concurrent imposition of tariffs on pigs and other animals, which, however, afforded a much lower level of protection.[13] Even within the ranks of labor there were groups which appeared not to oppose the tariffs.

The enactment of the tariff on wheat in France required the repeal of the Le Chapelier Law of 1791 which forbade associations based upon economic interest. A modification of this law in 1865 had made it possible to establish associations for the improvement of agricultural techniques. Its final repeal in 1884 paved the way for agricultural syndicates, which began by acting as producer cooperatives in the buying of fertilizer and agricultural machinery and in establishing credit unions. Very shortly these groups began to agitate for higher tariffs. The owners of large farms, marketing a larger proportion of their crop for cash than did the owners of small farms, had a greater interest in the price of wheat; but all farmers were affected by it. In only 10 of 87 departments of France did grain occupy less than half the tillable land in 1882, and only in one, Corsica, did the percentage fall below 40.[14] There is some evidence that the leadership in the political drive for protection was taken by the cattle interests of Normandy and Brittany. But all parts of the country, from the northern wheat dis-

[12] See Alexander Gerschenkron, *Bread and Democracy in Germany* (Berkeley: University of California Press, 1943), p. 45.

[13] *Ibid.*, pp. 26–29 and 57–58.

[14] E. O. Golob, *The Méline Tariff: French Agriculture and Nationalist Economic Policy* (New York: Columbia University Press, 1944), pp. 81–82. I rely heavily on Golob's treatment.

tricts to the southern wine areas (suffering from the depredations of *Phylloxera*), were united in their zeal to raise the relative level of French farm prices.

The success of efforts to obtain protection for agriculture was aided by a compromise with industrial interests. Agriculture and industry had not always readily adjusted their conflicts of interest. In the time of Napoleon, French commercial policy had favored industrial exports at the same time that it forbade the export of wheat or of agricultural products used by industry. Agricultural interests thereafter tried on several occasions to secure protection on such industrial supplies as hides, wool, oil seeds, and silk. In 1881 the farm interests hoped that commerce and industry would agree to a tariff of 10 per cent on foodstuffs in exchange for the concession of freedom to import agricultural raw materials. The compromise of 5 per cent, which did not apply to wheat, produced little satisfaction. After the final repeal of the Le Chapelier Law in 1884 and more effective organization, the markedly higher rates on grain and animals of 1885 and 1887 were won with the assistance of threats of retaliation against industry.

Italian tariff policy in the 1870's and 1880's favored industry over agriculture. In 1864 wheat had been subjected to a duty of $\frac{1}{2}$ lira per quintal to raise revenue. This was increased to $\frac{3}{4}$ lira in 1866 to meet the costs of the war. The tariff revision of 1878, undertaken primarily to regularize the duties of the newly formed kingdom, increased the rate on wheat to 1.40 lire per quintal. These rates were low. In other directions there was no protection for agriculture. Imports of rice and barley, for example, were free of duty. Yet industry enjoyed a considerable measure of protection.

The question of taxes on food was widely discussed. An excise tax of 2 lire per quintal of wheat had been imposed internally in 1869 to improve governmental finances; and, although vigorously opposed by urban and industrial interests, it continued in effect for fourteen years. The experience with this tax appears to have given the Italian government pause when increasing imports of grain from overseas, encouraged by the appreciation of the lire, began in 1884. Three years later, in 1887, the tariff was raised to 3 lire, a full two years after similar action was taken in France and Germany. The rate was increased again to 5 lire in 1888, after the tariff war with France led to the loss of the French market for the wines of southern Italy, to compound the distress of the region.[15] But by this time it was too late. The Italian peasant had already begun to emigrate. Gross emigration across the Atlantic, primarily from agricultural regions of Italy, increased from an average of 25,000 annually in the period 1876–80 to 73,000 in 1885, 83,000 in 1886, 130,000 in 1887, and 205,000 in 1888.[16] The 1888 figure, which is presumed to reflect the period of nominal tariff rates before April, 1887, with a time lag, was to remain the peak for thirteen years. Recovery of wheat prices under the impact of the tariffs and other factors slowed down the pace of emigra-

[15] International Institute of Agriculture, *World Trade in Agricultural Products* (Rome, 1940), pp. 794–98.

[16] I. A. Hourwich (*Immigration and Labor* [New York: Huebsch, 1922], p. 201) notes for a somewhat later period that more than 70 per cent of Italian immigrants to the United States came from agricultural regions. Gross emigration rates differ from net, it may be observed, by rather sizable amounts because of the practice of trans-Atlantic migration on a seasonal basis for harvesting, particularly to Argentina, by so-called *golondrinos* ("swallows").

tion somewhat. The flow, once started, however, became cumulative and self-perpetuating. Early emigrants encouraged first their families and then their relatives and neighbors to follow.

The response of Germany, France, and Italy to the decline in the world price of wheat was to impose tariffs in an attempt to maintain the relative price of wheat and to protect grain producers. In Germany the movement was led by Bismarck as a step toward a new political alignment of Junkers and steelmakers, but it had the consent of many of those whose interests were adversely affected. In France agriculture, more or less as a whole, negotiated through the tariff in reaching a settlement with industry. The reluctance of Italian industry to agree to increased tariffs and the delay in imposing them meant that the Italian response to the decline in prices was to quit Europe.[17]

V

Like Britain, the Netherlands, and Belgium, Denmark did not impose a tariff on wheat. Instead, it gave up the attempt to compete in the world export market for wheat and became a wheat importer. This shift was incidental, however, to a revolution in Danish agriculture, which was converted from the growing of grain to animal husbandry. Denmark was assisted in responding thus by its proximity to the rapidly industrializing markets of England and Germany, with their expanding national incomes, and by the high income elasticity of demand for butter and bacon. Given the demand, however, there are certain remarkable features about the response of supply which merit investigation. Of particular importance are the middle-sized farm, which predominated in Danish agriculture, the agricultural school system, and the co-operative movement. The second of these, at least, and perhaps the whole response to the decline in wheat prices was deeply affected by the defeat of Denmark by Germany in 1864 and the loss of the province of Schleswig.

Of all the countries of Europe, only in Denmark has the size of the productive unit been stabilized at the medium-sized farm—around fifty acres.[18] In other countries, over considerable periods of time, farm size has been increasing or decreasing. Periodic reversals occur under the influence of such discontinuous events as land reform—primarily the distribution of church or noble lands and parcellation of peasant strips (or inclosures) when these became too many and too narrow to work (or extensive farming became more profitable than intensive). Aside from these turning points, however, farm size appears to have a tendency to increase, as in Hungary, East Prussia, and England up to World War I, or to decrease, as in France, Switzerland, and western Germany. In some countries, like Italy and Poland, the two processes take place side by side. Land purchases by the wealthy, primogeniture, high income taxes, poaching laws, veneration of blood sports in the

[17] For lack of readily available secondary material, I have not investigated the course of events in Austria-Hungary, Sweden, Spain, and Portugal, which took action against new wheat imports, or in the Netherlands, Belgium, or Switzerland, which did not. A cursory examination of the tariff schedules (see "Decline and Recovery of Wheat Prices in the 'Nineties," Table VII, p. 350) and of annual figures for gross emigration overseas (*Annuaire statistique de France* [1914–15], Part III, p. 164) suggests that Austria-Hungary and Sweden were equally tardy in protecting agriculture and equally affected by emigration. Gerschenkron (*op. cit.*, pp. 40–41) gives an interpretation of the Swiss experience.

[18] See Jensen, *op. cit.*, p. 133.

culture, etc., tend to increase farm size. Equal inheritance and rapid population growth tend to reduce the size of the farm unit.[19]

In Denmark a variety of factors appears to have established and maintained the middle-sized farm. The principle of equal inheritance was offset by small family size, by a frontier of the sea to which extra sons could escape, and by easy credit, enabling farmer brothers to buy out their share of the patrimony. High land taxes made the maintenance of unproductive estates expensive. But the state intervened from an early date and continuously (1682, 1725, 1769, 1819) to prevent the landed aristocracy from adding peasant land to their holdings and to prevent undue subdivision as well. A policy of dividing large holdings into small, but not minuscule, units prevailed for several centuries and was reaffirmed in legislation providing for small holdings in 1899 and 1909. The institution of the middle-sized farm, which happens to be inefficient for grain production but is well suited to certain types of animal output, goes deep into Danish agricultural life.

The Folk School, or agricultural high school, was originated in 1844 by a remarkable man, Bishop N. F. S. Grundtvig, for the purpose of educating the rural population not in scientific agriculture but in "the Danish language and history and . . . its constitution and economic life." Classes are held in the five winter months for men and for three months in the summer for women, normally in some other part of the country than that in which the student lives. The schools attempt to provide the agricultural segment of the population with a unity of background and an awareness of the life of the urban population of the country.

The first Folk School was founded in Schleswig. After the loss of the province to Germany, this school was moved to Danish territory. Thereafter the movement spread rapidly.[20] By 1870, before the collapse of wheat prices, there were sixty or seventy in the country.

The co-operative movements in Sweden and Denmark have been widely studied. For present purposes, therefore, it is sufficient to make a limited series of points. To sell butter in international trade required bringing the "peasant" butter of uneven taste and texture up to "manor" quality. This meant a standardized product. After the invention of the cream separator, the manufacture of butter could take place on a large scale, even though the labor-intensive production of milk still required the medium-sized farm. Economies of scale in marketing were available not only in butter but in eggs and bacon as well. In this situation the spread of the producers' co-operative movement in Danish agriculture was rapid after the establishment of the first co-operative dairy in Jutland in 1882.[21]

Denmark's response to the decline in world wheat prices, then, was to revolutionize her agriculture and to change from an exporter of grains to an importer. It may be observed that the acreage de-

[19] A more complete statement might attach importance to types of soil.

[20] Jensen, *op. cit.*, p. 101: "After the defeat in the war of 1864, the work which was already begun was taken up by able and enthusiastic men." See also Harald Westergaard, *Economic Developments in Denmark* (Oxford: Oxford University Press, 1922), p. 13: "For the economic life of Denmark, [the War of 1864] was of still greater importance in that it gave industry a strong impetus for attacking and solving the many problems which pressed upon it within the country's narrowed boundaries."

[21] For an account of forerunners see Harald Faber, *Co-operation in Danish Agriculture* (2d ed.; London: Longmans, Green & Co., 1931), pp. 25–30.

voted to cereal production in Denmark increased rather than declined after animal industry had developed.

VI

These differences in European responses to the decline in the world price of wheat in the 1870's and 1880's may be summarized as follows: In Britain agriculture was permitted to be liquidated. In Germany large-scale agriculture sought and obtained protection for itself. In France, where the demography, pattern of resources, and small scale of industrial enterprise favored farming, agriculture as a whole successfully defended its position with tariffs. In Italy the response was to emigrate. In Denmark grain production was converted to animal husbandry. What factors outside the market account for these national differences? A number of attempts have been made to explain at least some of these various responses. The present section undertakes to review and comment upon these efforts.

The most familiar contrast, perhaps, is between the free-trade ideas developed in Britain by Smith, Ricardo, and Mill and the theory of national economy propounded in Germany, especially by Friederich List. A variant of the List doctrine can be found in the "nationalist economics" of Paul-Louis Cauwès in France,[22] although it is difficult to make the case that Cauwès' ideas were more than an aberration in an intellectual atmosphere which was much more sympathetic to the doctrines of the Manchester School. The place of Smith and List in Denmark appears to have been taken by Bishop Grundtvig, whose métier was poetry and national mysticism rather than economics; and no particular figure rationalized the action taken in Italy. It might be fair to say that the economists of Britain and the national economists of Germany provided the rationale for the action taken rather than its impetus.[23] And the relative unimportance of this function may be indicated by the action of France and Italy, taken in the absence of any distinctive rationale.

In its vulgar version the foregoing explanation is reduced to the single word "nationalism." Britain adhered to the international system; Germany and France were nationalistic in their responses. But this reasoning has evident weaknesses. Italy's solution was essentially international or one possible only in an international world, although the attempt was made to apply the "nationalist" solution of tariffs. It could be said that the Italian solution was more international than the British, where the displaced agricultural workers shifted into industry within their own country. The international solution, that is, may involve a shift in international trade or an international movement in factors. The explanation breaks down, further, on the side of nationalism. Leaving aside for the moment the subtle differences between the French and the German behavior, the Danish solution, like the French and the German, was a highly nationalistic one, taken without tariffs, to be sure, but in an atmosphere of nationalist emotion. Nationalism and internationalism in this context are compound variables of great complexity.

[22] See Golob, *op. cit.*, pp. 145 ff.

[23] I have discussed elsewhere the antithesis between the views of Keynes, who asserted that the world is ruled by little else than the theories of economists and political philosophers, and those of Arnold, who classes the economist with the lawyer and the scholar as performing a purely ceremonial role (see Lord Keynes, *The General Theory of Employment, Interest, and Money* [New York: Harcourt, Brace & Co., 1936], p. 383; and Thurman W. Arnold, *The Folklore of Capitalism* [New Haven: Yale University Press, 1937], esp. chap. iv).

They require, rather than furnish, explanation.

A more elaborate analysis, which fits the present case to a degree, though it makes no mention of it, is that developed by the Danish economist, Carl Major Wright, in his *Economic Adaptation to a Changing World Market*.[24] Wright observes that a country can respond to an adverse change in world market conditions by intervention to correct the world situation, by isolation from it, or by adaptation to it. His book contains a message for small countries like his own. These, he believes, are too weak to intervene in the world market and will not be allowed by the great powers to isolate themselves from it. In consequence, they have to adapt themselves to it. Toward this end he advocates increasing mobility of factors and competition among producers.

The contrast among intervention, isolation, and adaptation is suggestive as far as it goes, but it fails to canvass the alternatives fully or to explain the factors affecting choice among them. France and Germany isolated themselves from the world market, to the extent of the tariff. No country intervened to raise the world price of wheat, though this has been undertaken through international co-operation in the present century. England, Italy, and Denmark all adapted to the change, but in a variety of ways. Since a series of alternative adaptations was available and since adaptation was undertaken by large countries as well as by small, Wright's analysis fails to explain the differences in behavior which did occur. His emphasis on the necessity of small countries to adapt, however, suggests that larger countries are unable to adapt in the same way that is open to small countries. In Britain, for example, some substitution of cattle for sheep occurred, and over a longer period animal husbandry expanded to fill part of the gap left by a decline in croplands.[25] But, on the whole, Britain was content to import its wheat and its high-value protein foods as well. British agriculture lacked the energy, the resources, and the ability to devise the institutions which would have been necessary for large-scale conversion from arable cropping to animal husbandry.

Several Continental writers have provided an illuminating framework of analysis against which to contrast the behavior of Italy (and southeastern Europe from Hungary to the Volga) with that of the other countries. In *Les deux Europes*,[26] for example, F. Delaisi distinguishes between Europe A, lying within a circle drawn through Stockholm, Vienna, Barcelona, Bilbao, and Glasgow, and Europe B, outside the circle. Europe A includes northern Italy, upper Austria, and Bohemia and Moravia but leaves out Ireland, northern Scotland, and most of Spain. In Europe A industrialization was possible because of the rise of the bourgeois and their insistence on the spread of education; even in agriculture there was established a basis for rural democracy as peasants acquired land. In Europe B, however, constitutions and parliaments had no roots, illiteracy prevailed, the bourgeois class was small and

[24] Copenhagen: Munksgaard, 1939.

[25] Ensor, *op. cit.*, p. 117. It may be observed that some protection was afforded to the cattle interests by the sanitary regulations, passed in the 1890's, forbidding the import of live animals from the Continent and overseas. The principal competition for home-grown meat, even at this time, however, was in meat imported from the Southern Hemisphere, a trade which developed with the innovation of refrigerated ships in the 1880's. Beef grazing, however, is far less labor-intensive than dairying and would have been, from the point of view of employment, a much less satisfactory adaptation.

[26] Paris: Payot, 1929.

timid, working with the aristocracy against the peasant and urban laborer rather than challenging the power of the feudal nobility.

When technological advance made industrialization possible, Europe A adopted it; Europe B gradually collapsed. After 1880 emigration rose sharply from Europe B, consisting particularly of Italy, Austria-Hungary, Spain, Portugal, and Finland, as far as Delaisi's statistics went, but including also Russia, Yugoslavia, and Greece. For the countries covered by Delaisi, emigration overseas in the decade 1881–90 amounted to 180,000 annually. In successive decades the annual average climbed to 265,000, 629,000, and 907,000 by 1901–13.[27] In Europe A, on the other hand, emigration to overseas areas declined, after hitting new peaks in 1881–85. This was because of the opportunities afforded by the expansion in industry.

But this explanation by no means covers the situation in its entirety. Britain was much further along in the urbanization process than was Germany or France. This may help to a degree to explain why industry was ready to permit the liquidation of agriculture and why emigrants from agriculture found their way into cities rather than abroad. After industrialization has started, however, and has reached a point where the process is self-generating and cumulative, the rate of growth should be more important than the existing level of industry. And this pace after 1870 was faster in Germany than in Britain. Nor was industrialization meaningless in France: "While France accepted the new techniques and institutions of industry, and even played a significant role in developing them, she did not permit agriculture to be eclipsed, or to suffer revolutionary change."[28]

As between Italy and Denmark, the quality of agriculture was evidently more important than the proportions of population engaged in rural pursuits (which were of the same order of magnitude after adjustment for definitions of urban life). Delaisi's division of Europe into two and his discussion of the extent to which the collapsing feudal structure was replaced by modern industrial and national institutions are interesting. The fact of industrialization and the explanation of its concentration in northwestern Europe, however, fail to account for the differences among the responses of the several countries to the decline in the price of wheat.[28a]

VII

None of the foregoing explanations completely accounts for the differences in response to the market; and perhaps the differences should be approached from the standpoint of a theory of group behavior. To be adequate, such a theory

[27] *Ibid.*, p. 207. These sources are called "new," in contrast with Germany, Ireland, Britain, etc., in H. Jerome, *Migration and Business Cycles* (New York: National Bureau of Economic Research, 1926). It may be noted that emigration from Ireland fluctuated parallel to that of Europe A, though it lies in Europe B in Delaisi's scheme.

[28] Golob, *op. cit.*, p. 8.

[28a] W. Röpke (*The Social Crisis of Our Times*, [Chicago: University of Chicago Press, 1950]) finds the clue to the development of agriculture in the various countries of Europe in the existence or absence of a sturdy peasant body. Its absence accounts for the injury to British agriculture; its presence for the Danish success (pp. 245–46). The peasantry of Italy and "SE Europe lacked soundness" (p. 204). Wheat protection favors large estates and is detrimental to peasant agriculture (p. 247). But this analysis fails to cover the French case, where peasants gained from protection; and Röpke himself fatally damages the consistency of his position in the statement (p. 205): "Admittedly, agriculture is that part of the national economic system to which the principles of a free market economy could only be applied with broad reservations. . . ."

must include not only criteria for differentiating the responses of national groups as a unit but also a system of analysis for interrelations among the subgroups within the larger unit. The theory of group behavior appears not to have coped adequately with this sort of question. In the main, social psychologists, sociologists, anthropologists, etc., have concentrated their attention on the relation of the individual to the group, to the relative neglect of the structure of the very large group (the nation) and of functional groups within it.[39] Where intergroup relations have attracted attention, it has been focused on the problems posed by cultural minorities and the relations between groups differentiated by age, sex, etc., rather than on large functional groups. Lacking a foundation in scientific literature, the following notions on group behavior are general and tentative.

A group must exist in space and time. To be effective, a group must have a system of communications and a set of common values. The existence of the national group in *space* hardly merits discussion. It is an elementary principle of geography that mountain ridges make the best national boundaries—though they are disliked by the military interests charged with protecting the group—since they are the national barriers of language, culture, and commerce. Rivers provide a system of intercommunication rather than a barrier to it, and a country lying in a great plain, like Poland, has uncertain limits. Water in larger amounts is helpful in demarcating the national space. The existence of Britons as a homogeneous group has been assisted by their insular position, while subgroups are demarcated by highlands. Changes in the national space have an important reaction on national cohesion. The Danish "groupiness" or group consciousness was enhanced by the loss of Schleswig; the French by that of Alsace-Lorraine. Italy and Germany, at the same time, gained group solidarity from unification in space.

The existence of a group in *time* is connected with its *set of values*. This must be sufficiently attractive or forceful in the spiritual or emotional life of the group for its members to express their loyalty to the group by remaining a part of it through time and bringing their children up as members. The existence of the group in time suggests a difference between material things and social institutions. Matter can wear out evenly over time; when a functional group recognizes that it is doomed to extinction, however, it is difficult to let it decline slowly at the normal rate of depreciation by refusal to maintain it. When faith in the continuity of the organization or group is lost, the group is likely to disintegrate.

The importance of *communication* to the group is increasingly emphasized by social psychologists working with small functional groups, such as the personnel of factories, unions, etc. It is equally important in larger groups. Switzerland, where four languages are spoken, is cited as an illustration of its unimportance in certain situations. In this case space and a powerful set of values are sufficient to hold the group together. The subgroup of agriculture is typically weaker in cohesion than urban groups because of its dispersal in space and the resultant diffi-

[39] This statement is perhaps unfair to Talcott Parsons and Robert K. Merton and their structural-functional approach to sociology, with which I am inadequately acquainted. For an attempt to apply this to the French economy see the forthcoming essay by John E. Sawyer, "Strains in the Social Structure of Modern France," to be published in a volume on France by the Princeton University Press.

culty of communication among its members. The Folk Schools in Denmark and the formation of agricultural syndicates in France were requirements for the maintenance of the agricultural group in the face of the threat from reduced wheat prices.

An existence in space and a system of communication are not enough to constitute a functional group. The parts of the group must share a sense of identification and emotional involvement and a feeling of participation and purpose before the separate subgroups can be considered to make up a group. This sense of unity and purpose may be enhanced by the existence of an antithetical "out-group." If the sense is insufficiently developed to begin with, however, the development of an "out-group" may lead to the disintegration of the "in-group."

The major contrast lies between Denmark and Italy. In the former, national feeling was intense, as a result of territorial loss, and social cohesion was high. The rural population felt itself a unit and identified itself with the larger national unit. In Italy, despite the recent unification of 1871, the peasant's sense of belonging to the national group was feeble. A blow to his means of livelihood led to the disintegration of the national group, as far as he was concerned. He withdrew—the type of reaction which the classical economists thought was difficult because of cultural barriers and which, indeed, is today barred by the xenophobia of other national groups. Similar responses took place in the Balkans, the Iberian Peninsula, and throughout the rest of feudalistic Europe.

The weakness of the national group in Europe B, to use Delaisi's designation, was due to the failure of national unity to replace the disintegrated feudal group structure. National groups lacked intercommunication and common values. Illiteracy, for example, ran from 10 per cent in the Po Valley in Italy to 30 per cent in Florence and Rome, 50 per cent in Naples, and 70 per cent in Calabria.[30] No new emotional attachment replaced the feudal ties which had bound the peasant to the latifundium. Group cohesion was too weak to meet the challenge, and the group, under pressure, collapsed.

The importance of the out-group to the cohesion and efficiency of the national group is illustrated effectively by the role played by German aggression and the loss of Schleswig in the Danish response to the decline in wheat prices. Other examples are not lacking in economic history. The French payment of the five-billion-mark indemnity in 1871 was an act of national dedication—and even immolation. To generalize from this experience as to the behavior of exports, imports, prices, and the banking system in similar situations where the group stimulus is absent is a familiar practice of economists,[31] but it is highly questionable.

VIII

The contrasting behavior of Britain, Germany, and France requires an understanding of more than the over-all degree of group cohesion at the national level. Attention must be given to the relations among the separate subgroups. This, to be sure, has a bearing on the over-all cohesiveness of the nation: a country in which the subgroups are not sharply differentiated and where a degree of social mobility between them exists is likely to

[30] Delaisi, *op. cit.*, pp. 46–47.

[31] See, e.g., F. Machlup, "Three Concepts, the Balance of Payments," *Economic Journal*, March, 1950, p. 59 n.

have greater cohesion. For the moment, however, our attention is restricted to the relations among the economic subgroups.[32]

E. R. Walker asks, "When do men accept the verdict of the market, and when do they attempt to alter it?"[33] A parallel question can be put for group behavior: When does an ascendant subgroup liquidate another subgroup within the large group, and when does it make adjustment with it? Under what circumstances do relationships among subgroups tend to stay in continuous equilibrium, and when do divergences of interest lead in cumulative fashion (as Marx predicted) to schism and clash? Why did industry allow the liquidation of agriculture in Britain, but not in Germany or France? The question appears not to be a simple one of relative strengths or even of more complex strategies of coalition, such as those suggested in *The Theory of Games*. There was no reason for the German steel manufacturer to accept coalition with an essentially backward[34] group of agriculturists or of French industry to make concessions to the pre-scientific peasant. The answer may be found in areas outside the normal province of the economic theorist or the economic historian. The decisive factors do not appear to lie in the field of economics at all but in that of sociology.

One clue to intergroup behavior may be found in the notion that not all group relations are competitive. Bateson, the anthropologist, has listed a series of stable interdependent subgroup relationships, which, to be sure, primarily apply to subgroups based on age and sex. These include bipolar relations, such as spectator-exhibitionist, dominance-submission, succoring-dependence, aggression-passivity, and the like, but may extend to more complex arrangements. Among the latter, Bateson distinguishes what he calls the "ternary relationship," which contains serial elements but includes face-to-face contact between the first and third elements. The function of the middle member in his illustrations—parent-nurse-child and officer-n.c.o.-enlisted man—is to discipline the third member in the forms of behavior which he should adopt toward the first.[35] The relations of the middle class to the wealthy and to the working classes may partake of this character in some political and social respects.[36]

This clue, by no means unambiguous, may assist in explaining what took place in Germany. Gerschenkron expresses the view that the Junkers deceived the peasants of western Germany, whose interest lay in cheaper grain prices, by provision for a tariff on animals and by other means. The reaction, however, may contain elements of submission of the peasant groups before the will of the Junker with higher status. Residual traces of the feudal relationship existed; probably more important were the battles won for the glory of the national group in 1864, 1866, and 1870. Part of labor and even the steel barons were content to main-

[32] An individual in the society, of course, will belong to a variety of subgroups based on his occupation, class, religion, avocations, age, sex, race, etc.

[33] *Op. cit.*, p. 109.

[34] This characterization is objected to as unfair to the Junkers, who, whatever their disagreeable attributes, were men of responsibility who energetically farmed their own land in the face of natural difficulties rather than live off the unearned increment *in absentia*. Yet they were backward in the sense that they clung to traditional crops farmed with traditional techniques. Perhaps a more appropriate adjective is "static."

[35] Gregory Bateson, "Morale and National Character," in G. Watson (ed.), *Civilian Morale* (Cambridge: At the University Press, 1942), pp. 71–81.

[36] See, e.g., Maude and Lewis, *op. cit.*, *passim*.

tain the economic position of the Junkers, in the face of opportunity to liquidate them, because of the element of status which in the former case outweighed class interest. The leadership and dominance exhibited by the Junker class probably explain the major part of its success in maintaining its position through the Caprivi tariff, World War I, the inflation, and the Nazi regime.

Another clue may lie in that most complex conception, the basic personality type of a culture or subculture. This notion, developed by the social psychologist with the help of anthropological data, denies that human nature is a constant in time or space but holds that the basic personality type of a culture will condition responses to external stimuli and, in turn, be altered by them. Of particular importance, it is held, is the way in which the society rears its children.[37]

This matter is far too complex and elusive to pursue here beyond the rough generalization that the basic personality type differs among England, France, and Germany, in putting primary emphasis in the culture, below the level of the national group, on, respectively, the individual, the family, and the class. If this be accepted, it may assist in explaining why Britain was willing to liquidate agriculture, while France and Germany were not.

Economic and political liberalism, born in Britain, required social mobility to give importance to the individual at the level next below the national group. Mobility in space was provided for Britain, as for Scandinavia and the Netherlands, by the sea, which served as a frontier.[38] At home, despite the class structure, social mobility upward derived from the willingness of the aristocracy to admit successful commercial and industrial interests to the ownership of land and their sons to the public schools. Downward mobility was provided by primogeniture, which drew off the increase in the aristocracy into the middle class. Whatever the facts, the concept of class as a functional subgroup was not recognized in the culture. A blow to a broad economic interest was regarded as affecting not a class but a loose aggregation of individuals.[39] This may account for the passivity of the nation in watching unmoved the liquidation of agriculture in the thirty years after 1879.[40]

The opposition of industry and agri-

[37] See A. Kardiner, *The Psychological Frontiers of Society* (New York: Columbia University Press, 1945); Ruth Benedict, *Patterns of Culture* (Cambridge, Mass.: Houghton Mifflin Co., 1934); Clyde Kluckhohn, *Mirror for Man* (New York: Whittlesey House, 1949), etc. Given the emphasis on anthropological data, primary attention has been devoted to the personality types of cultures rather than subcultures, and Kardiner, for example, regards Western man as a homogeneous type. This notion is in process of correction at the hands of Meade, Bateson, Gorer, and others.

[38] See H. A. Innis, "Economic Significance of Cultural Factors," in his *Political Science in the Modern State* (Toronto: Toronto University Press, 1946), p. 87.

[39] A number of writers have referred to the alleged inability of the British farmer to co-operate because of his individualism. See, e.g., E. J. Russell, who states in the Foreword to Faber, *op. cit.*, pp. vii–viii: "The British method, in short, proved less capable of adaptation to new and adverse conditions than the Danish. Critics may argue . . . that the British farmer is so confirmed an individualist and so imbued with the idea of running his own farm in his own way that he cannot co-operate with his neighbor. It may or may not be so." See also H. Rider Haggard, *Rural Denmark and Its Lessons* (London: Longmans Green & Co., 1911), p. 273: "The Danes look upon their land as a principal means of livelihood . . .—in short, as a business proposition in which the Nation is most vitally concerned. In the main, although we [Britain] may not acknowledge it, we look upon our land, or much of it, as a pleasure proposition in which the individual only is concerned." Haggard also cites (pp. 192–93) the sad case of a Norfolk honorable secretary of a rat and sparrow club who was unable to enlist any co-operation from potential benefactees.

[40] See n. 11, above.

culture in France was more apparent than real; both were concerned not with economic interest as such but with economic interest in a context of the dominant social institution of the family. This has been studied in industry, where the conclusion has been reached that the size of firm which could be kept in the family from generation to generation limited the growth of industry.[41] The unwillingness of the French to emigrate is further evidence. And the continuity of the French farm in the family group from generation to generation is a commonplace.

In Germany the major subgroup, at least at the extremes, was the class. To the extent that the nobility was a farming group in occupation, group solidarity and economic interest were unified in the Junker portion of agriculture, while they were opposed among the peasants. Such conflict of group and economic interest is not, however, unusual: Walker has expressed surprise that the farmers of Australia support a program of land settlement contrary to their economic interest.[42] But these farmers gained more through the growth in numbers of their group than they lost through the increase of supply. The question was one of class and, within the total class structure, of dominance.

IX

The Danish response to the decline in the world price of wheat was by far the most satisfactory, whether in social and economic terms or in economic terms alone. It raised the level of real income for the producer group at the same time that it preserved the gain of cheaper bread for the consumer. Social upheaval was avoided. Was the whole episode an accident? Was this sort of solution possible for the other countries? To what extent is it possible to capitalize disaster in this fashion on a general scale?

The mind of the economist is likely to try to find a parallel in certain situations which occur when wage increases lead to expansion rather than to contraction of output because they provide the incentive to a recombination of factors in a more efficient fashion. The classic example is the elimination of the sweatshop through the efforts of union leaders, which increased incomes for both laborers and enterprisers and also reduced the cost of clothing. This was brought about by requiring firms in the garment industry to employ their newly expensive labor efficiently. The market opportunity for combining capital and labor in more efficient fashion had existed before the success of the union drive. Until the system was pushed off dead center, however, the path of least resistance was resistance to the demands of the union.

The parallel is not exact. A beginning of dairying to replace grain cultivation had been made in the 1860's before the decline in the price of wheat, primarily, however, on large estates.[43] The motive was only partly economic. In part it was observed that the soil was being impoverished by grain crops. There was still another difference. Although a market opportunity offered by the relative prices of grain and butter already existed, it was considerably increased by the decline in the price of wheat in the 1870's and 1880's and the rise in the demand for butter in the growing urban centers of

[41] David S. Landes, "French Entrepreneurship and Industrial Growth in the Nineteenth Century," *Journal of Economic History*, IX (1949), 45–61.

[42] Walker, *op. cit.*, pp. 123 and 222–23. Another case is probably that of the American Medical Association, which is unified in opposing expenditures on health by governmental bodies which would increase the incomes of the vast majority of its members.

[43] Faber, *op. cit.*, pp. 31–32.

England. A real impetus to the conversion came from the price decline. Particularly remarkable was the capacity of Danish economy, or polity, to develop the institutions which were necessary to complete the conversion on a large scale to take maximum advantage of the economic opportunity.

It may be contended that there was a marked degree of accident in the existence of the middle-sized farm, which was inefficient for wheat, and in the development of the agricultural high school, in response to the loss of Schleswig. The explanation for the prevalence of the middle-sized farm would appear to lie deep in the Danish basic personality type, which emphasizes stability rather than growth.[44] The development of the Folk School was perhaps partly an accident, but the Danish peasant had always shown a communicating tendency,[45] and this fact may be more important than the particular form of institution devised at the particular time.

The development of the co-operative in response to a technological need raises more fundamental problems. What factors govern the capacity of a society to develop institutions required to enable it to take advantage of economic, political, and social opportunities? Are these adaptations always accidental? Under certain conditions, are they made automatically; or can they be contrived through direction after conscious decision?

Most commentators on the co-operative believe that this development was the product of the prevalence of the freehold in Danish land tenure, together with the high degree of education in Danish farmers. "Tenant farmers will not co-operate because, co-operative accounts being open to inspection, they fear their landlords might raise the rents if it were found that they were prospering."[46] But the emphasis given to the form of land tenure goes deeper than this. The point is that co-operation in Denmark flourished, because of the social cohesion which enabled the farmers to create the necessary institutions, when the occasion demanded economies of scale in marketing along with labor-intensive production. The prevalence of freeholds bespeaks equality of status, which makes communication freer in all directions. Education increases the quantity and quality of communication. Together with a high degree of communication, a closely held set of values, and internal social mobility—all of which are interrelated—Denmark had social cohesion. It was this factor which enabled her to create institutions needed to take advantage of an economic opportunity. In the absence of the economic opportunity, however, the institutions would not have been devised.

In general, then, the suggestion is offered that the flexibility of a society in devising institutions to accomplish its purposes under changing conditions is a function of its social cohesion, which, in turn, depends upon its internal social mobility, system of communications, and set of values. If social cohesion is high, it may be possible to find a response

[44] See Benedict, *op. cit.*, pp. 53–56 and chap. iv for a discussion of the Spenglerian contrast between Apollonian and Faustian cultures and the description of a self-balancing society. Bateson has described another such primitive society in *Naven* (Cambridge: At the University Press, 1936). Franz Oppenheimer mentions other instances of the prevalence of small and medium-sized landholdings in Utah, Iowa, and New Zealand in "The Tendency of the Development of the State," in V. F. Calverton, *The Making of Society* (New York: Random House, 1937), pp. 40–42. Cf. H. Rider Haggard's literary description of the Danes as "tolerant-minded" (*op. cit.*, p. 212).

[45] See Faber, *op. cit.*, p. 7.

[46] Haggard, *op. cit.*, p. 190.

to external change which will bring about a new identification of the interests of the subgroups with those of the total group at an improved level of satisfaction for all. If the system of communication is sufficiently effective, moreover, it may be impossible to isolate the decision-making process so that the response of the society appears to be automatic.

X

What I have said can be reduced to some fairly elementary propositions. The response that will be made to an economic stimulus in international trade cannot always be predicted from the nature and extent of the stimulus. It may require a knowledge of the group situation within the separate countries affected. The response may be the disintegration of the group, leading to emigration if that is possible, or, if no such outlet is available, to pathological political behavior. The effect, on the other hand, may range from the liquidation of a particular subgroup in the society, for the benefit of others, as in Britain; through the protection of the affected group at the general expense, as in France and Germany; to an inspired act of readjustment undertaken by the group as a whole. Which of these actions will be taken lies deep in the structure of the society. For accurate prediction and policy-formation, an adequate theory of the behavior of large groups and their components is needed as an adjunct to the analytical tools of the market.

EFFICIENCY IN PUBLIC SOIL-CONSERVATION PROGRAMS*

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SOIL conservation has been an important element of the nation's agricultural policy during the last two decades, and apparently society chooses to continue investing resources in this way. Two important economic problems relate to public conservation programs: (1) What is the optimum over-all level of conservation, and hence what total quantity of resources should society invest here? (2) How should given funds (once appropriated for soil conservation) be allocated if maximum efficiency is to be guaranteed? The two aspects are not entirely separate. The optimum total quantity of funds for conservation is partly a function of efficiency in the use of given funds. However, the analysis which follows focuses on the problem of allocation.[1] My chief purpose is to outline the principles which should serve as a basis for allocating funds once these have been earmarked for conservation. I also examine certain aspects of current conservation programs in the light of these criteria and analyze the optimum over-all level of conservation investment (relative to the use of general resources and to specific soil development). The basic conditions which denote maximum efficiency are provided in the Appendix.

FEDERAL PROGRAMS

The two major national agencies dealing directly with soil conservation are the Production and Marketing Administration (hereafter PMA) and the Soil Conservation Service. In the thirteen years 1936–48 gross assistance distributed to participating farmers by PMA under the heading of Agricultural Conservation Payments (hereafter ACP) averaged 459 million dollars annually.[2] While perhaps early ACP payments can be looked upon as nearly an income subsidy under the guise of conservation assistance, those from 1943 on cannot be so regarded.[3] The second national program of major importance is that of the Soil Conservation Service. SCS appropriations averaged around 26 million dollars over the 1936–47 period.[4] While

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[1] Although the major problems of conservation fall within a framework of nonstatic production economics, the analysis which follows is largely in the vein of static production economics and firm theory. This procedure is followed, since even these elementary tools are adequate for evaluating many phases of current programs.

[2] U.S. Department of Agriculture, *Statistical Summaries of Practices, Agricultural Conservation Program* (Washington, D.C., December, 1948 and 1949). During the period 1936–43 the ACP program included some commodity payments. Aside from small flax payments in 1945, assistance in the period 1944–48 was labeled entirely for conservation.

[3] The *PMA National Bulletin for 1950* (ACP–1950 Agricultural Conservation Program National Bulletin, Production and Marketing Administration, U.S. Department of Agriculture [Washington, D.C., July, 1949], p. 1) states the following: "The intent of the 1950 Agricultural Program [hereafter referred to as the 1950 program] is to obtain the greatest possible conservation with available funds."

[4] U.S. Department of Agriculture, *Reports of Director of Finance, Office of Budget and Finance* (Washington, D.C., 1936–48).

the monetary assistance of PMA more nearly supposes cost and return as the important obstacle, SCS technical assistance more nearly supposes lack of "know-how" as the major obstacle. But obviously common principles should guide direct and indirect use of resources. Are the limited public funds set aside for these programs being allocated in a most efficient manner? Limited annual appropriations for conservation might be allocated entirely to one soil type or to one erosion-control practice. Or they might be allocated equally to all soils and practices. The important problem is the portion of limited conservation resources which should be allocated to particular soils and practices.

MEANINGFUL DEFINITION OF SOIL CONSERVATION

The first action of a public agency charged with soil conservation should certainly be the establishment of a basic definition of conservation. Otherwise, there can be no systematic manner in which public funds and resources are used. Present action programs do not make sufficient differentiation between long-run conservation problems and short-run production problems. If distinction between soil conservation and other general production programs were made on the basis of "production from the soil" per se, seed corn, tobacco plants, and insect spray would qualify for public assistance on equal terms with terraces, lime, and other resource inputs. Furthermore, if distinction rested on time alone, farm buildings, machinery, and livestock in general should also receive "conservation" subsidies. In the true sense, conservation does refer to the allocation of production and consumption over time.[5] However, for purposes of the analysis which follows I shall refer to soil conservation in a somewhat different and restricted sense. A meaningful conception of soil conservation over time is the prevention of diminution in future production on a given area of soil and from a given input of labor and capital (with the conservation practice, resource input, and the technique of production otherwise constant).[6]

Prevention of gullying is thus a conservation measure, since future production would be diminished as the original inputs of capital and labor were applied to the remaining (nongullied) land area in the absence of "conservation" practices or resources. Sheet erosion is not yet directly related to future production if its rate is at a fraction of an inch per year on a deep top soil (wherein the same application of nonconservation inputs results in an equally great output in successive production periods).[7] Sheet ero-

[5] This decision is indirectly implicit in federal programs such as PMA and SCS. Society can tax itself in unlimited quantities and use the funds to subsidize and otherwise obtain higher and higher levels of soil conservation. In so doing, it can bid manpower and capital away from current production of houses, automobiles, and other consumption goods. In curtailing current production of the latter through diversion of resources to conservation practices, society is making a choice between present and future production. The decision is, again, the optimum combination between present and future goods (even though these goods may differ between time periods). For a more detailed discussion of these questions see Earl O. Heady, "Fundamentals of Conservation Economics and Policy" (Ames: Iowa State College, 1950). (Mimeographed.)

[6] Whether or not an equal output is forthcoming from the same level of input can be measured only in terms of a given technique. Obviously an improved technique might allow an equal product with a smaller resource input, thus hiding the decrease in productivity (which was potentially available had the technique been known earlier).

[7] There are practices which both increase production and result in conservation in the manner which I have outlined. Brome and alfalfa may not only prevent erosion but also increase soil productivity. Combinations such as this should qualify as conservation measures. The greatest need is to eliminate production practices which do not involve conservation while real conservation practices go unadopted elsewhere.

sion causes a break in production, however, if the remaining subsoil results in a smaller output (as compared to the original top soil) from equal applications of labor and capital. Application of nitrate fertilizer on level land, which simply increases production when applied with previous resource combinations, does not meet our test as a conservation measure.

Without some such criterion there would be no limit to the short-run production practices in which public funds might be invested. Funds might equally well be invested in improved livestock techniques as in agronomic and soil enginnering practices which have the main effect of increasing production. In the discussion which follows, I emphasize conservation practices (resources) only as those which prevent diminution of output in the future from given resource inputs (retention of a given production function over time). In terms of our criteria, efficiency in the use of limited annual conservation appropriations is denoted by allocations which minimize the potential diminution of future production when given resources are applied to the land.[8]

NECESSARY CONDITIONS FOR MAXIMUM CONSERVATION

Obviously a necessary condition for the attainment of maximum conservation is that funds be used in fact for conservation practices. The figures of Table 1 suggest that an important part of PMA payments do not meet this elementary test. Irrigation, drainage, and weed control are not practices which are generally necessary to prevent a diminution in future production. (The practices are substitutes over time for other types of resources except as they prevent permanent deterioration of the soil.) If irrigation is not developed or improved on a tract of land now, there is nothing to preclude its initiation at a future date with an equivalent increase in production. The same can be said for mechanical drainage practices and weed control. Although the line cannot be drawn so clearly, certain other practices subsidized by PMA can also be questioned. Green-manure and cover crops often fall in this category. A legume or grass crop used to prevent erosion or permanent deterioration in soil structure is related to production in the future. However, where these crops are used simply to boost short-run production of subsequent grain crops on level soil types, they hardly qualify for public subsidy if the objective is the maintenance of future productivity.[9] Payments for liming materials

TABLE 1

DISTRIBUTION OF 1947 ACP PAYMENTS MADE BY PRODUCTION AND MARKETING ADMINISTRATION

Practice	Payment
Inorganic materials	$110,169,248
Protective and green-manure crops	37,217,766
Mechanical erosion control practices	37,230,515
Drainage practices	11,225,838
Irrigation practices	9,207,828
Pasture and range practices	35,666,245
Forestry practices	602,534
Weed control	7,402,699
Miscellaneous practices	16,073,897
Total	$264,796,570

[8] A similar objective has been stated by PMA (see n. 4 above). Again, one purpose of this paper is to examine the accomplishments in this direction.

[9] I refer especially to practices such as those listed under Part B of Section 3 of the *PMA National Bulletin for 1950*. Section B includes "practices to develop cropping systems that protect the soil and restore, improve and maintain soil productivity" (p. 6). Numerous short-run production practices, when applied on level land (in contrast to practices ands oil specifications which might prevent diminution in long-run production), are eligible under the specifications of this section. Part A of Section 2 (p. 1) also states: "Practices to be approved will include only those which maintain or increase soil fertility, control and prevent soil erosion caused by

and inorganic fertilizers for grasses and legumes on level land with the principal effect of increasing short-run grain yields fall in a similar category.[10] Subsidization of practices with no effect in preventing diminution of future production represents an inefficient use of public resources (when processes which do lessen future production are taking place).[11]

A similar analysis can be applied to SCS technical assistance. The first soil-conservation districts were generally formed in areas with the greatest erosion hazard and hence where a true conserva-

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wind and water, encourage conservation and better agricultural use of water and increase range and pasture forage." Under our definition of conservation, those practices which "maintain or increase soil fertility" fall in the category of *intertemporal substitutes*. This is also true for drainage and irrigation practices falling under the heading of "agricultural use of water" or certain aspects of increases in "range or pasture forages."

[10] I have defined a relevant and practicable problem of conservation as existing if a given future application of labor and capital (to a given soil area) no longer gives as great an output as in an earlier period when these same qualities were applied. I include the virgin supplies of nitrogen and other soil elements as part of the original input. If part of the natural supply of soil elements has been used, obviously it may be true that the original quantity of labor and capital (aside from fertilizer and related soil amendments) will not give so great a yield. However, our condition that the same inputs be applied would require also that soil elements of equal in quantity to those of the original soil condition. Thus our "early" inputs may have been partly furnished by nature, whereas, to have equal labor inputs, fertilizer elements may have to be brought in from the "outside." Thus a downward traverse of a given production function as the virgin supplies of nitrogen, phosphorus, or potash are used is not a true problem of conservation by our definition. The original production level can always be regained by replacing the quantity of elements supplied by nature but which have been withdrawn from the soil.

[11] Again it should be pointed out that in the analysis of this section we are not concerned with whether the total fund allocated to conservation is of optimum magnitude. Instead we are taking as given that society has set aside a limited fund for programs and is examining the efficiency of allocation between alternatives. It should also be remembered that our criteria of conservation (preventing diminution of future production) refer to application of the equal resources. If application of the same labor and capital on the same soil area will bring forth the same future production (as if applied currently), then a true problem of conservation does not exist. I again ask why, if short-run agronomic practices are to be subsidized, funds should not also be used on improving vegetable storage, eliminating chicken lice, rat eradicating, or other nonsoil practices which also increase the present output from given resources. It may be argued that assistance to the farmer in draining a piece of bottom land increases either his feed supply or his income, so that he can afford to remove hill land from intensive production. Yet, were this to be a real basis for aid in draining the bottom land, there would be little reason why technical assistance should stop here. Why not help the farmer improve livestock rations, breeding, and sanitation? These may be fully as effective as drainage in offsetting any (*a*) lowered income or (*b*) lessened feed production resulting from withdrawal of hill land. True, consideration of the farm as a unit is important, and, unless this is done, farm planning is hindered. A farmer with a very low income is going to be little concerned about practices which bring in more income later but less now. By helping the farmer organize his resources to increase income generally, the public may implement conservation practice. Yet this problem is not per se one of conservation, and conservation subsidies and planning can do little to remove it. It is more nearly a problem in the general allocation of resources within a farm unit or farm management. Our current PMA subsidies and SCS planning do not approach the general allocation problem. In fact, one of the weaknesses of these programs is that they do not treat the farm as a complete farm unit. Wide changes in cropping systems are planned for individual farms with little respect for the capital and income position of the farmer. Sufficient consideration is not given to setting up alternatives to fit the capital, income, tenure, or managerial position of farm operators. Cropping changes are made which call for wide changes in livestock systems, use of labor, and capital inputs. Yet nothing is done under our current conservation planning programs to help the farmer figure out the latter (even though these may be more complex and important than figuring out the erosion control practices). What is actually needed is a complete farm planning or farm management program in which all farm resources (capital, labor, land management) are considered together and under which conservation and production are integrated. This program would be justified in terms of general production or allocative efficiency. Conservation programs of the nature now employed cannot solve the problems of low incomes, lack of resources, and general inefficiency, which are the important obstacles to conservation practices.

tion problem existed. Furthermore, a greater proportion of SCS technical assistance is probably allocated to conservation practices (as defined here) than is true for PMA monetary assistance. As the number of soil-conservation districts has expanded, however, the erosion hazards have generally been less critical, and a portion of technical assistance has been devoted to developing irrigation systems, drainage districts, and the like. Certainly the SCS technical assistance used for irrigation, improved rotations on level land, or drainage developments (where these are of a nonconservation nature) could better be employed where permanent deterioration of the soil is taking place. Given the objective of maximum conservation, the efforts of a farm planner in York County, Nebraska, for example, should be allocated to erosion control on the rough land rather than to irrigation development on level lands. Similarly, one farm planner in Champaign County, Illinois, concentrating on drainage and one in Switzerland County, Indiana, combating erosion would not represent the best use of resources.

SUFFICIENT CONDITIONS AND ALLOCATIONS BETWEEN SOILS

Allocation of public funds to practices or soils where potential diminution in future production is prevented is a *necessary* condition for the maximum attainment of conservation (from given funds). It is not, however, a *sufficient* condition. On the basis of this criterion alone, public funds would be allocated to the various soil areas on the basis of the number of acres of soil subject to erosion or other permanent deterioration. An acre of one soil subject to erosion would have as much claim on public assistance as an acre of any other soil subject to erosion. Yet this would not guarantee the greatest degree of conservation (the smallest diminution in future production from given resource inputs).

Present funds should be given allocative priority between soil associations in terms of their marginal productivity in the relevant future time period. Each increment of investment in monetary or technical assistance should be spent in a manner which minimizes the diminution of future production (owing to erosion or other processes which permanently lower productivity). For example, limited conservation resources should have priority in preventing the loss of an acre of the excellent Tama-Muscatine soils of eastern Iowa over an acre of Shelby-Sharpsburg in southern Iowa or northern Missouri.

If conservation funds were allocated on the criterion of maximum attainment from given or limited conservation funds, annual investment in either direct subsidies or technical assistance in one soil area might well amount to several times that of another soil with an equal acreage subject to erosion. These possibilities are suggested in the experimental data of Table 2. If annual conservation appropriations are limited and if diminution of future production is to be minimized, it is more important to save two acres of Marshall silt loam while two acres of Shelby silt loam erode away than to save one acre each of Marshall and Shelby while one acre of each also erodes away. With the annual appropriations short of those necessary for complete safeguarding of future production, some soil areas should go entirely without subsidies while payments are concentrated on productive soils which are most important in the long run.

DIFFERENT PRACTICES ON GIVEN SOILS

Current allocation of public funds between conservation practices also suggests some lack of economic system. One criterion might be the selection of qualifying practices which enable most farmers to collect some payment. This system has no basis within the framework of our efficiency criteria. Another basis for allocation of funds between practices and one which evidently has been used to some extent is the cost of the installation or practice. For example, with cost of terrace construction at 15 cents per cubic yard of earth moved and waterways at 12 cents, 70 per cent of the cost of each might be subsidized. Absolute cost is not, however, a sufficient basis for allocating funds between practices. Greater conservation might result from given annual appropriations if 80 per cent or even all of one practice were subsidized while 40 per cent or more of a different practice was subsidized.

TABLE 2

EXPERIMENTAL YIELDS FOR TWO DIFFERENT SOIL TYPES UNDER SIMILAR MANAGEMENT PRACTICES, 1932–42*

ROTATION	CORN YIELDS, 1932–42 (BU. BUSHELS)	
	Shelby Silt Loam, Bethany, Mo. (8 Per Cent and 72.8 Ft. Slope)†	Marshall Silt Loam, Clarinda, Iowa (9 Per Cent and 72.6 Ft. Slope)‡
Continuous corn	19.7	28.5
Corn–small grain–meadow	26.1	42.9

* The small grain was oats for the Marshall experiment and wheat for the Shelby experiment. Meadow included red clover for the former and red clover and timothy for the latter soil.

† Source: *Investigations in Erosion Control and Reclamation of Eroded Shelby and Related Soils at the Conservation Experiment Station, Bethany, Missouri, 1930–42* (U.S.D.A. Tech. Bull. 883 [Washington, D.C., April, 1945]).

‡ Source: *Investigations in Erosion Control and the Reclamation of Eroded Land at the Missouri Valley Loess Conservation Experiment Station, Clarinda, Iowa, 1931–42* (U.S.D.A. Tech. Bull. 959 [Washington, D.C., October, 1948]).

In practical application of this principle PMA should discriminate carefully between the rates of payments for different practices even within a given soil area or farm. Where conservation problems exist, funds should be spent on those practices which yield the greatest degree of conservation per dollar invested.[12] The economic incentive should be greater (on a given soil type) for establishing a rotation with at least one year of meadow on a farm which has previously had no meadow than for establishing a rotation with three years of meadow on a farm which previously had two years of meadow. Or, it is more important to encourage terracing on a farm with continuous corn than on a farm with a meadow rotation. The need for and possibility of differentiating between practices do exist as is suggested in Table 3.

TABLE 3

EFFECT OF CROP ROTATIONS, TERRACING, AND DIRECTION OF SLOPE ON SOIL LOSS PER ACRE FROM SMALL WATERSHEDS, 1934–41

Practice	Computed Reduction in Soil Loss (Tons) per Acre*
Terraced over unterraced with:	
a) Continuous corn	4.80
b) C-C-O-M	1.38
C-C-O-M over continuous corn with:	
a) Unterraced	4.03
b) Terraced	0.61

* Computed from U.S.D.A. Tech. Bull. 959, *op. cit.*, p. 69, Table 24. The data on the unterraced results are for a southeast slope, while those for terraces are for a northeast slope.

TECHNICAL ASSISTANCE

SCS technical assistance should also be allocated among practices on the basis

[12] Some practices are complementary to each other: A legume seeding may fail if attempted without lime on an acid soil. Lime alone may be ineffective without phosphate. However, these combinations should and can be considered together in productivity analysis.

of productivity principles. Widespread application of practices which have the greatest effect in erosion control and hence in preventing diminution of future production should be attained before resources are devoted to simple practices which have less relationship to potential future output. Yet farm planners have been occupied in devising complete plans for some farms while there were waiting lists of other farms to be planned even on the same soil association. Optimum allocation of limited technical assistance would require application of "fewer but critical erosion control practices on greater numbers of farms" rather than application of "the greatest number of practices on fewer farms."

RETURNS TO THE INDIVIDUAL

Returns to the individual should be a basic consideration in any governmental conservation program which involves subsidy payments. Given a goal of maximum conservation from limited appropriations, distinction should be drawn between these practices which (1) are not profitable to the individual farmer and would not be carried out in the absense of subsidy and (2) those which are profitable and would be adopted without a subsidy. Of course, there is a need for public subsidization of enterprises, resource combinations, or practices which are beneficial to society but are unprofitable to the individual. Our criteria, however, do not justify subsidization of private production where returns to the individual and society do not diverge. This distinction has not been made in PMA payments. Farm practices which are clearly profitable have not only been subsidized but payments have also been made for many practices which farmers would have adopted even in the absence of ACP payments. One outstanding historical example here is the payment for plowing under second-year red clover in the Corn Belt. Red clover is a biennial, and the only alternative is to plow it under. A portion of the liming, fertilizer, and seedling practices also falls in this category. These allocations represent inefficient use of limited funds if maximum conservation is the goal and if important areas exist where erosion control practices are not profitable to the individual or would not be adopted in the absence of subsidization.

There are numerous reasons why certain erosion control practices are economic to society but are unprofitable to the individual. These divergences arise mainly in the case of (1) leasing arrangements whereby either tenant or landlord does not realize the full marginal product from his investment because of (*a*) sharing systems and (*b*) the length of tenure; (2) capital situations whereby the operator with limited funds realizes either (*a*) greater returns from investment in other alternatives or (*b*) greater family welfare by consuming now rather than in investing for future returns; (3) general economic instability wherein uncertainty of future returns discourages conservation development (along with other long-lived investments); and (4) flood control or other conservation measures where the necessary investment is large and clearly unprofitable to the individual. Should public subsidy be used as a permanent offset to these forces which tend to prevent conservation? Public subsidy, while the answer in the last case, is clearly not the basic economic remedy for the first three. It is a poor substitute for their elimination. Unless we endeavor to eliminate these obstacles, society must stand ready to subsidize conservation for many decades.

Our current SCS and PMA are not

appropriate remedies for the following problems. (1) *Tenure arrangements:* (*a*) developing leasing arrangements which resolve economic conflict between landlord and tenant,[13] (*b*) extending education which facilitates adoption of improved leasing systems, and (*c*) developing legislation (where this is the only alternative) to guarantee compensation for conservation and related investment. (2) *Lack of capital:* designing credit system to conform to the timing and returns of conservation farming. (3) *Economic instability:* designing fiscal policy and other means to eliminate the wide fluctuations in returns and the uncertainty which accompany inflation and depression.

FORM OF PAYMENT

The form of payment under the PMA monetary assistance program is also of economic interest when the subsidy is for practices which are unprofitable to the individual. Payments may take either one or two forms: (1) as a variable payment over time directly proportional to the part of the original conservation investment transformed into annual cost within a single production period or (2) as a lump-sum payment over time covering the original investment with no relationship to its annual transformation or depreciation. Annual recurring practices such as contouring, seed for close-growing crops, and lime or fertilizer for obtaining "catches" of the latter are examples where the initial investment (labor, fuel, materials, depreciation on equipment, etc.) generally parallels the annual cost per unit of the practice (input). However, in the case of dams and terraces the initial investment does not represent the annual cost of the practice; the annual cost is represented by the depreciation of the investment and other expenses which recur from year to year throughout the life of the installation.

The form of payment should conform to the nature of the annual transformation (or depreciation) of the practice or installation if public investment in conservation is to be safeguarded overtime. For monoperiod or annual recurring practices such as contouring, payment per unit of practice in the year applied is the appropriate economic vehicle if adoption of the practice is to be expected. This is true because the costs of the practice are variable in the sense that all inputs are "transformed" within a relevant production period. The costs within any production year are thus directly proportional to the units of practice applied in the same period. But in the case of installations with a life of several years, the full transformation does not take place in the year of initial investment. Accordingly, an installation subsidy for investment which lasts several years need not guarantee or induce subsequent maintenance.[14]

[13] For more details here see Earl O. Heady, "Economics of Leasing Systems," *Journal of Farm Economics*, XXIX (1947), 659–78.

[14] Although the subsidy for these "long-lived" practices may be in terms of payment per unit of initial installation, it is in effect a lump-sum payment over time; the entire amount is paid at one point in time with no relationship to later unit costs of maintenance. If installation investment (terraces, dams, drainage, etc.) was originally unprofitable in a static sense and if the subsidy is in lump-sum form, then subsequent maintenance generally will still be unprofitable to the farmer. (Or, if some practices are already in use and the goal is to extend their adoption, the lump-sum subsidy will not guarantee their maintenance.)

A subsidy for installation investment does not lower the marginal cost of installation maintenance. Here we have been considering a case in which long-lived installations are unprofitable under any circumstances. The farm has a greater profit after the lump-sum subsidy (if the productivity of resources invested is greater than zero), but it cannot increase its profits further by maintenance. We have been concerned only with maintenance costs (possible

There are, however, two situations under which an installation subsidy may make it feasible to apply practices even in the absence of a maintenance subsidy. One of these has to do with uncertainty and the other with capital limitations. (1) Even if the historic return is greater than the historic cost, the farm firm may still discount future returns to such an extent that it is subjectively rational to view the venture as "unprofitable." In this setting a present subsidy tied to installation may in effect increase the certainty and lower the discount on future income (thus encouraging installations which would otherwise appear "subjectively unprofitable"). (2) In the other case the operator might find it profitable to invest in conservation installations were capital not limited. But, with limited capital and a prospective return on livestock at (say) 10 per cent and a return on conservation installations at 5 per cent, he will still forego investment in the latter. Subsidy earmarked for installation would, however, make profitable the application of the conservation practice.[15] Yet subsidization of installation investment is not a necessary means under the situation where the practice is profitable in an absolute sense and unprofitable only in a relative sense (e.g., where capital is limited and other investments return more conservation installations). One alternative is an interest-free loan of funds for conservation installations. (Present installation subsidies are interest-free, and even repayment of the fund itself is unnecessary.)

RELATION OF CONSERVATION TO DEVELOPMENT

Up to this point we have not examined the total quantity of society's resources being invested in conservation. Our analysis has focused on the efficiency of using given funds once these have been appropriated. We now turn to the total quantity of society's resources which should be allocated to annual conservation practices. The quantity of resources to be invested in direct conservation activities cannot be separated from alternative employment of the same resources.[16] Obviously, conservation should be extended only as long as the marginal productivity of resources so invested is not less than in the many competitive uses of these same resources. In the analysis which follows we are especially interested in relating soil conservation (as defined earlier) to soil-development opportunities.[17]

Conservation should especially be related to irrigation and other national soil-development programs Actually conservation and development can be substitutes in providing future food and fiber "needs." And the two should be developed congruously in the sense of

cases where maintenance alone is unprofitable to the individual). Here we have in mind the repair of depreciation in order that the installation be kept in functioning order. However, an additional annual cost might also be considered. This is interest on investment. If interest on investment must be considered as an annual cost (especially when explicit), subsidization of the original capital investment will result in a lower annual per unit cost of the installation over time.

[15] An unrestricted (not tied to conservation practices) lump-sum subsidy or capital loan would still not result in installations where capital is the limiting factor and other investment opportunities give greater returns. The operator would use the added funds in the alternatives giving the greatest returns.

[16] Potential conservation funds can be used in intensifying and increasing production on soils which are not subject to permanent deterioration. They can also be employed in developing new techniques which increase the product from given resources.

[17] I define soil development as the use of resources which serve as technical substitutes for those already employed in agricultural production.

equating marginal productivity of investment in each. The important economic consideration is the extent to which limited public funds should be invested in (*a*) controlling erosion in order that agricultural product from some soils will not be sacrificed in the future or in the alternative of (*b*) extending future production on other soils through irrigation, etc. Investment should be made in the control of erosion if it increases future output by (say) 100 units of wheat or other product while a similar investment in irrigation extends future production by only 75 bushels. Conversely, if 100 units of "product" can be made available by conversion of dry-land farming to irrigation while a loss of only 50 units of future production can be prevented by an equal erosion control investment, the former should be given priority.

Allocations of this nature require that a goal or objective be established relative to the future need for (the economic productivity of resources invested in) agricultural products. The goal should suggest (1) the quantity of agricultural products "needed" relative to the products of other industries and (2) the cost of guaranteeing this level through (*a*) conservation of soil or (*b*) irrigation and other development. Obviously, even the establishment of "goals" of future production is not easy. The "needed" extent of future production and hence erosion control (or its substitute, irrigation or other development) depends on (*a*) growth of population and aggregative demand, (*b*) changes in general techniques and the efficiency with which soil resources are transformed into product, (*c*) tastes of consumers for agricultural relative to other products, (*d*) war needs and international trade, and (*e*) other variables. Prediction of these variables and hence the "need" for future agricultural production (relative to nonagricultural products) is obviously subject to error. This complexity does not, however, justify unlimited and unregulated public investment in soil conservation or development. Even though they be subject to errors of prediction, careful inventories should be made (1) of the expected trends in techniques and demand and (2) of the quantities of the various soil types (*a*) subject to erosion and (*b*) capable of development through irrigation and otherwise. After estimation of the aggregative portion of future product which depends on either (1) increasing output through irrigation or (2) preventing diminution of production through erosion control, the components of this development-conservation program should be computed.

UNCERTAINTY AND FLEXIBILITY

Given certainty (or expectations otherwise single-valued) in the prediction of future events, the entire portion of soil for which conservation is uneconomic (e.g., where the product lost through erosion can be offset at a lower cost by irrigation and other development) might be allowed to "erode" away over time. But erroneous prediction is a reality which must be faced. Expectations of the future can at best be viewed only partially in the vein of empirical probability (historical trends). We must also consider expectations of which the probability of each possible outcome can only be estimated subjectively. Unexpected (those not inherent in empirical trends) wars, population growth, lags in techniques, or other contingencies may actually come to exist. There can be no "turning back" if soil needs have been underestimated and an important quantity has been allowed to waste away. For

this reason, provisions for intertemporal flexibility in the use of soil resources is doubly important; society must make sure that "stand-by" production capacity (1) is available if the "low-probability" and hence "unfavorable" expectation does come about but (2) need not be carried at an extreme sacrifice if the contingency fails to materialize. (If the contingency never materializes, society sacrifices in the sense that it has invested resources in an alternative of low productivity.)

Flexibility would not be achieved if only a minimum soil area (that consistent with the expectation to which the greatest subjective probability is attached) were retained for future production. The possibility for "turning back" does not exist if the "single" expectation fails to materialize. But if some range of "surplus" soil is carried into the future, it (1) can be used if the need arises or (2) can be left out of production if the need never arises. The important question is one of how the range of flexibility can be carried at the lowest possible cost. Should the land which is needed only to meet future contingencies (and not for current production) be maintained in annual use through annual subsidies paid for the contouring, terrace upkeep, and seeds and fertilizers necessary for erosion control? This is not a necessary procedure. The margin of land carried for flexibility purposes might be better retired from production and returned only if the need arises. The alternative to be selected—(*a*) withdraw from production or (*b*) maintain in production with continuous annual subsidy of erosion control practices—should obviously depend on costs (resource requirement). In many cases the first alternative will require a smaller outlay over time (once the land has been seeded down or otherwise prepared to prevent deterioration). It is also possible that the soil area retained for purposes of flexibility might also be employed for grazing or other extensive operations. Continued public subsidy of annual practices is not a necessary condition in providing "stand-by" production capacity.

APPENDIX

For analytical purposes I present the explicit conditions under which maximum efficiency in the allocation of limited soil-conservation resources can be attained. These outline the nature and form of data needed for developing a program which will allow maximum conservation from given or limited annual appropriations. As is suggested by the tables in the text, a large body of data is available for establishing or estimating the empirical counterpart of the conditions outlined below.

DEFINITION OF SOIL CONSERVATION

Under my definition soil conservation (retention of a given production function over time) is not involved if we traverse production function *A* (Fig. 1) in varying "nonconservation resource inputs." Conservation resources are those required to maintain a given production function over time (and which prevent a drop, for example, from production function *A* to *B*). If the original input of resources (labor and capital in the form of tractor fuel, seed, fertilizer, and other nature) is OX_1, with a resulting output of OY_3, "conservation" is not involved; for the level of input is raised to OX_2 and the product to OY_4. Neither need be raised over time as price relationships change and input falls back to OX_1 and output of OY_3 if the process can again be reversed. The objective of soil conservation should be to prevent a "fall" from production function *A* to production function *B*. If this permanent break (from one productivity curve to another) does come about, our previous condition is no longer fulfilled. An equal application of resources in the future will not result in an output of the original magnitude. For example, if the input of labor and

capital is increased to OX_2 (after the fall to B), it results in an output not of OY_4 (production function A) but of only OY_2 (production function B).

I might better indicate the implications of my definition in a slightly more complex production economics model. For example, we might use a production function of the nature $Y=f(X, Z)$, where Y is the total production within a given production period (and from a given soil area), X represents the nonconservation labor and capital (seed, fertilizer, tractor fuel, etc.) inputs of the same period, and Z represents the conservation labor and capital inputs of an earlier period. Thus as we start cultivation of a virgin soil we have production function A. We are still on the same production

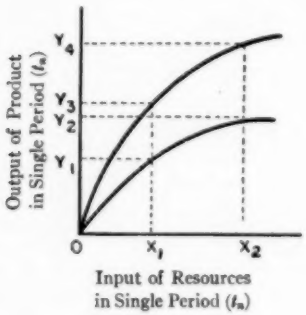

FIG. 1

function (in respect to X resources) if in a later period equal inputs of X result in an equal Y output (as compared to the earlier period). Or "production function" A represents the productivity of X resources with some fixed magnitude of Z resources over time. Curve B represents the productivity of X with a smaller fixed input of Z. However, the "discrete" opportunities are not reversible, since, once curve B has been attained, a given increase in Z will not always result in the same output as if the latter (Z) inputs had been made before the occurrence of erosion or other forms of soil deterioration. Or input of Z necessary to retain production function A for X resources is less than the input necessary to restore A, once deterioration has come about. The relevant level of Z input can thus be looked upon as the necessary (nonreversible) fixed cost over time if the A productivity curve is to be retained for X resources. The B curve represents a lower fixed cost in Z resources over time in order that the indicated lower productivity of X resources may be retained. If the A productivity curve for X resources can be retained over time in the absence of Z resource inputs, a true conservation problem does not exist.

INTERTEMPORAL COMPLEMENTARITY

In the terms of production economics, conservation practices are thus denoted by resource inputs (labor and capital) which are technical complements between time periods with resources which are transformed into product within single time periods. Nonconservation resources are characterized as competitive (technical substitutes) with other resources within a single time period. (These conditions refer to attaining a given output on a particular tract of soil.) We do not classify all complementary factors of production as conservation resources. Only those which are independent factors in early periods (t_o) but become complementary in future periods (t_n) are so classified. If one factor of production S is complementary to the same extent with factor R in all periods, it does not qualify as a conservation resource. Unless distinction is made in terms of the complementary characteristics which have been outlined here, soil conservation cannot be distinguished from any other aspect of production. The distinction can perhaps best be explained with an example: Suppose that an initial input of a resource combination X_1 (say, seven hours of labor, fifty pounds of fertilizer, and a given physical quantity of other factors) results in an output of fifty bushels of corn per acre in the early period (t_o). If input of an additional resource Z_1 along with the original input of the combination (X_1) results in an output of sixty bushels in a later period (t_n), the additional resource (practice) is a substitute; some smaller input of fertilizer, labor, or other resources in the original combination (X_1) can be used along with the Z_1 resource input to attain an output equal to the original fifty bushels. However, if in the later period (t_n) the original (X_1) combination of resources results in an output of (a) only forty bushels without the Z_1 resource input but (b) fifty bushels with the Z_1 resource input, the latter is a conservation resource (practice); unless Z_1 resources are employed, the original output cannot be attained over time from the original X_1 combinations.

SUFFICIENT CONDITIONS IN ALLOCATION BETWEEN SOILS

Our objective is to outline the allocative conditions under which maximum conservation can be attained from limited annual public appropriations. How should SCS or PMA allocate funds among the many heterogeneous soil types in the United States if a maximum "conservation product" is to be attained? The goal should be one of equating the (future) marginal productivity between soil areas from current investment of conservation resources. Figure 2 suggests the (future) productivity of various quantities of (current) conservation investment on soil A. Figure 3 represents the situation for soil "B." (Figure 4 combines Figs. 2 and 3 in the sense of inverting Fig. 3 counterclockwise and transposing it over Fig. 2.) With a total possible current investment of OZ_1 in Figure 2 (which equals $O'Z'_1$ in Fig. 3), the entire investment would be made on soil A. The marginal productivity of all investments up to this point on soil A (Fig. 1) is greater than any investment, however small, on soil B (Fig. 2). Given a total possible current conservation investment of OZ_2 ($=O'Z'_2$) for the two soil types as indicated in Figure 4, OZ_1 should be invested in soil A and Z_1Z_2 ($=O'Z'_1$) should be invested in soil B. Under this combination the marginal productivity of investment is equated between the two soil types.

The situation for the two soil types also might be represented by two production functions such as $Y_n=f(X_n, Z_o)$ and $Y'_n=f(X'_n, Z'_o)$, where the first refers to the output from and resources applied to soil type A, while the second refers to the same product and resources for soil type B. Y_n and Y'_n represent the product of the future (t_n) time period; X_n and X'_n represent the input of nonconservation resources of the same period (t_n); and Z_o and Z'_o represent the input of conservation resources from an earlier period (t_o) for the A and B soils, respectively. In Figures 2–4 we are holding the input of X resources constant to examine the productivity of Z resources. This is consistent with our presentation in Figure 1, where we are, in effect, holding Z resources constant to examine the productivity of X resources. Figures 2 and 3 thus also represent the future product sacrificed from given applications of nonconservation resources (X) if the relevant quantities of conservation resources (Z) are not applied earlier. For example, if the input of the conservation resource is Z_1Z_2 in t_o on soil A, the given application (say, OX_1 of Fig. 1) of X will result in output of only OY_1 rather than OY_2 in t_n.

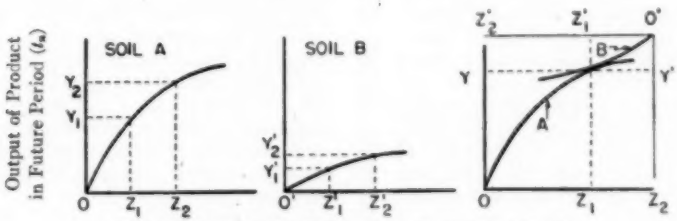

FIG. 2 FIG. 3 FIG. 4

ALLOCATION BETWEEN PRACTICES AND FARMS ON GIVEN SOILS

PMA makes a list of conservation practices eligible for monetary subsidy on all soil types. It generally pays an equal portion of costs for all these. Is this the most efficient use of funds if "conservation is to be maximized"? The economic logic underlying the optimum allocation of conservation funds between practices and within soil types can again be illustrated by Figures 2 and 3. With the goal of maximum conservation from given funds, allocation of monetary assistance should be in terms of maximizing (future) marginal productivity of each increment of investment. Suppose that Figure 2 represents practice A, such as terracing which can be applied in different degrees over the soil area through terrace spacing, number of acres terraced, etc. Figure 3 might represent practice B such as lime, inorganic fertilizer, forage or cover crops which can also be applied

to the land in varying degrees. Diminishing productivity would be expected. Given a total quantity of funds OZ_2 ($=O'Z'_2$) to allocate between practices A and B, the "cost of installation" criterion employed by PMA would result in investment of one-half (or OZ_1) on practice A and one-half (or $O'Z'_1$) on practice B (with a resulting output of OY_1 from practice A and $O'Y'_1$ from practice B). However, on the basis of the productivity criterion, the entire fund OZ_2 ($=O'Z'_2$) would be invested on practice A. Future production from current investment would thus be maximized, since the total product (prevented from "eroding" away) would amount to OY_2 (which is greater than $OY_1+O'Y'_1$). Given a quantity of funds greater than OZ_2 ($=O'Z'_2$), the task is one of equating future productivities between practice investments. (One of many such combinations again is illustrated by Figure 4 for a total present investment between practices equal to $OZ_2+O'Z'_2$.)

The logic which applies to the monetary assistance of PMA also applies to the technical assistance of SCS. The SCS has the problems already posed in allocations between soil types and between practices. The same sort of allocative problem exists for SCS between farms and practices. Present policy emphasizes "complete farm planning" whereby all (a combination at least of) practices are completed for one farm before those of another farm are started. The limitations of this method relative to a "maximum product" from given annual assistance can be illustrated by Figure 2. Suppose that two farms of the same soil makeup exist. Both have identical intertemporal production functions of the nature suggested by the relationship between present erosion control input and future output in Figure 2. The available amount of present conservation input (technical assistance in this case) is OZ_2. In the vein of "complete farm planning," a limited input OZ_2 of technical assistance would be applied on one farm, while none was being applied to the other. However, in terms of the optimum allocative principle, OZ_1 ($=OZ_2$) would be applied to both farms. Future production would be augmented, since the combined product would then equal $2OY_1$ on the two farms as compared to only OY_2 under "complete farm planning." The output gained (OY_2) on the second farm would be greater than the output sacrificed (Y_1Y_2) on the first farm. Application of the entire OZ_2 input of technical assistance on one farm with none on the second could be justified only in the case of a linear production function.

THE NEUMANN-MORGENSTERN UTILITY INDEX—AN ORDINALIST VIEW

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I

A TYPE of confusion which characterized earlier attempts at (cardinal) utility measurement[1] has reappeared in discussions of the ingenious Neumann-Morgenstern construction.[2]

In the verbal presentation of the book itself, as well as in other discussions,[3] the impression is conveyed that a more or less unique numerical index of utility (i.e., *the* true measure) can be deduced from a sufficient amount of information obtainable from the observed behavior of an individual. Thus, for example, we have the authors' statement that "we hope we have shown that the treatment by indifference curves implies either too much or too little: if the preferences of the individual are not all comparable, then the indifference curves do not exist. If the individual's preferences are all comparable, then we can even obtain a (uniquely defined) numerical utility which renders the indifference curves superfluous."[4]

This statement can, no doubt, be very cautiously interpreted to imply simply that the construction is an arbitrary but effective procedure whereby one among the many utility functions compatible with the individual's scale of preferences may be chosen.[5] But the impression is given by this and other statements in their book that Neumann and Morgenstern regard the utility index obtained by them as the *only* true one. It is my contention that neither of these interpretations can be completely defensible and that, in particular, the more extreme second interpretation is completely untenable.[6] The weaker interpretation of the authors' contention is questionable, for the construction (because of the nature of the premises employed) may in particular cases be inconsistent with the individual's scale of preferences, so that for many persons no Neumann-Morgenstern utility index may

[1] See, e.g., Paul A. Samuelson, *Foundations of Economic Analysis* (Cambridge, Mass., 1947), chaps. v and vii. The present paper is in many ways merely an application of these arguments to the Neumann-Morgenstern index construction. I have also had the benefit of Samuelson's criticism and the opportunity to read his paper, "Probability and the Attempts To Measure Utility," which is as yet unpublished. I should also like to mention my debt to Professor Viner, Drs. Finch and Gordon, and Mr. Rosenbluth.

[2] John von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behavior* (Princeton, 1947), chap. i, Sec. 3, and appendix, pp. 617 ff. All references are to the second edition.

[3] Milton Friedman and L. J. Savage, "The Utility Analysis of Choices Involving Risk," *Journal of Political Economy*, Vol. LVI (1948). Also Jacob Marschak, "Rational Behavior, Uncertain Prospects, and Measurable Utility," and John F. Nash, Jr., "The Bargaining Problem," esp. pp. 156–57, both in *Econometrica*, Vol. XVIII (1950). But cf. William Vickery, "Measuring Marginal Utility by Reactions to Risk," *Econometrica*, Vol. XIII (1945), esp. Sec. II, and Kenneth Arrow, *Social Choice and Individual Values* ("Cowles Commission Discussion Papers: Economics," No. 258 [New York, 1951]), pp. 10–12. In no case do I claim that the authors in question hold any of the views to which this paper objects. Rather I suggest that they are obscure, or at least do not place sufficient emphasis on these points, and that the problem *may* have arisen out of widespread misinterpretation of their writings. Note the case of Friedman and Savage discussed in Sec. III below, where this definitely appears to be the difficulty.

[4] *Op. cit.*, pp. 19–20. Cf. also Sec. 3.3.1, and Friedman and Savage, *op. cit.*, pp. 287–88.

[5] In this respect see the more cautious statements in *Theory of Games*, pp. 24 and 28.

[6] See *op. cit.*, and J. R. Hicks, *Value and Capital* (Oxford, 1939), mathematical appendix (to chap. i), for two good discussions making this point.

be possible.[7] In these respects the Neumann-Morgenstern index appears to be neither better nor worse than the earlier attempts of Fisher and Frisch to measure utility.[8]

It may be well to indicate a possible source of misapprehension about the nature of the items whose utility is under discussion. People speak of the utility of a hat, but a hat can only have a utility (or place in the preference scale) which does not vary with the person's possessions if it is neither complementary with, nor substitutable for, any other item (including another hat?).[9] This implies that at best we can hope only to get a unique measure of the utility of (or, indeed, an ordering by preference of) the totality of one's possessions in various situations. Let us call such a set or potential set of possessions a "prospect."

Let us now note the sense in which Neumann and Morgenstern claim their index to be unique.[10] If $U(a)$ is the utility of any prospect a, we shall have for any two Neumann-Morgenstern utility indexes, V and U:

$$V(a) = sU(a) + t, \qquad (1)$$

where s and t are constants and where a different utility function corresponds to each choice of s and t. Thus we have only two degrees of freedom (a unit of scale and an absolute zero) in choosing a utility index from the information given us by the Neumann-Morgenstern construction.

II

I begin by arguing with the Neumann-Morgenstern utility construction may be incompatible with the scale of preferences of the individual whose utility it seeks to measure. In order to prove uniqueness in the sense of equation (1), that is, cardinality, something must be postulated implicitly or explicitly about human psychology. This premise must be incompatible in some sense with all other utility indexes, so that Neumann and Morgenstern can somehow employ it to reject all other measures.

This basic assumption[11] turns out to be an alleged description of psychic reaction to risky alternatives, which amounts to the assertion that utilities are compounded actuarially. This should not be confused with the view (Bernoulli and Marshall?) that consumers always accept the actuarial value of a risky proposition as indicative of its utility. Thus, if the utilities of situations respectively valued at \$1,000, \$500, and \$0 are taken, respectively, to be 10, 8, and 0, we may note that an individual faced with a fifty-fifty chance of getting \$1,000 and \$0 must, according to Neumann and Morgenstern, be taken to value it at 5 utils, that is

[7] Unless we are prepared to define utility as that which is measured by the Neumann-Morgenstern index. But then utility would not be what is meant by the term in most economic discussions. Cf. J. de V. Graaff, "Mr. Harrod on Hump Savings," *Economica*, XVII (1950), 87 n. Also *Theory of Games*, p. 28: "We have practically defined numerical utility as being that thing for which the calculus of mathematical expectations is legitimate."

[8] Cf. Samuelson, *op. cit.*

[9] This may be the basis of Professor Bishop's contention that independence of at least two items is required for cardinal utility ("Consumer's Surplus and Cardinal Utility," *Quarterly Journal of Economics*, LVII [1943], 438–46). However, I do not find the argument convincing in the general case. Thus a necessary and sufficient condition for cardinal utility, meaning that any two utility indexes U and V must satisfy (1) (see below), is (if they are differentiable) given by $V''(U) = 0$. But, writing V_x for $\partial V/\partial x$, etc., we have identically $V_x = V'U_x$ and $V_{xy} = V''U_xU_y + V'U_{xy}$, from which we get $V'' = 0$ is identical with $V_{xy}/V_x = U_{xy}/U_x$. Now it is customary to take $U_x, V_x > 0$ for any commodity, x. If, then, we take the standard measurable utility criterion that x and y are complementary, substitutes or independent as U_{xy} is positive, negative, or zero (see Samuelson, *Foundations*, p. 183), it is clear that independence is sufficient but not necessary for measurability.

[10] For a more profound discussion see *Theory of Games*, Secs. 3.4.4–3.4.6. Even here, however, it is not the authors' purpose to go very deeply into the theory of measurement.

[11] This is only tacit in the Friedman-Savage analysis (*op. cit.*, p. 289). It may seem strange that a premise, rather than straightforward observation, is employed in the measurement process. Utility is presumably something which cannot be measured directly except, perhaps, by introspection, but which must be inferred from observed behavior. This requires assumptions (definitions?) like "people choose so as to maximize utility," or like those used in the construction in Sec. IV below. In addition, any proof of uniqueness (ordinality) must, as indicated above, be based on some sort of assumptions.

one-half of 10 plus one-half of 0, rather than at 8 utils, which is the utility of $500, the actuarial value of the chance. Using our earlier notation, the assumption may be written formally thus, using the notation $[b : p, c : (1 - p)]$ to denote the lottery ticket offering the probability p of obtaining prospect b, with prospect c as the consolation prize (c thus having probability $1 - p$):

$$U[b : p, c : (1-p)] = pU(b) + (1-p)U(c). \quad (2)$$

It seems to be this property to which Neumann and Morgenstern refer in pointing out that their system excludes any "utility of gambling."[12] The relationship between "utility of gambling" and actuarial weighting of utilities can be seen from the numerical illustration of the preceding paragraph. Therefore is it not possible that, if an individual derives a great deal of pleasure from gambling, he will value this chance as little worse than the certainty of $1,000, and if, on the contrary, he detests risk, he will regard this chance as little better than $0?[13]

It is easy to show that the set of utility functions which satisfies equation (2) and represents a complete (continuous) scale of preferences of an individual also satisfies condition (1), i.e., these functions are arbitrary only in scale and origin; and the construction of such an index is readily indicated.[14]

Our problem is then to examine the implications and legitimacy of assumption (2).[15] First of all, though, it must be noted that equation (2) does not appear in the *Theory of Games* as an assumption at all.

By (2) the value of $U(a)$ is then

$$U(a) = pU(b) + (1-p)U(c). \quad (i)$$

The utility of any risky situation is then found directly from (2) and the utility of its components. For the construction where a is preferred to both b and c or vice versa, see Friedman and Savage, *op. cit.*, p. 292.

To show that (1) is satisfied, we merely take U and V to be two indexes satisfying (i), i.e., resulting from different arbitrary choice of $U(b)$, $V(b)$, $U(c)$, and $V(c)$. Then we easily get:

$$V(a) = \frac{V(b) - V(c)}{U(b) - U(c)}U(a) - \frac{V(b) - V(c)}{U(b) - U(c)}U(c) + V(c) = sU(a) + t.$$

A more closely circumscribed family of indexes can be obtained if instead of assumption (2) we adopt the premise given by:

$$U[b : p] = pU(b) \quad (ii)$$

for then, for any two utility indexes U and V satisfying (ii), we clearly have

$$U(a) = \frac{U(b)}{V(b)}V(a) = sV(a)$$

(s an arbitrary constant)

so that we have only one degree of freedom in choosing our utility index. However, (ii) is tantamount to assuming (2) and taking $U(0) = 0$ as our origin in addition, for we then have, taking $c = 0$ in (2):

$$U[b : p] = U[b : p, 0 : (1-p)] = pU(b) + (1-p)U(0) = pU(b).$$

[12] *Op. cit.*, p. 28.

[13] Alternative definitions of utility of gambling which do not exclude this phenomenon from the system are possible (cf. Friedman and Savage, *op. cit.*, p. 289 n.).

[14] To construct such an index, take any prospects, b and c, and take arbitrary values for their utilities (the two degrees of freedom). Consider any certain prospect, a, such that b is preferred to a but a is preferred to c. By assumption there must be some value of p for which the individual is indifferent between the certainty of a and the combination of b with probability p and c with probability $(1 - p)$, i.e., for which

$$U(a) = U[b : p, c : (1-p)].$$

[15] It may be suggestive as a first approximation to consider this premise as the resultant of two other assumptions:

a) The independence (noncomplementarity or substitutability) of risky items given by:

$$U[b : p, c : (1-p)] = U[b : p] + U[c : (1-p)], \text{ and} \quad (i)$$

b) The actuarial weighting of the utility of a single risky prospect

$$U[b : p] = pU(b), \quad (ii)$$

which is identical with (ii) in n. 14 above. It is noteworthy that (ii) can be used by itself to derive a cardinal utility index, which is a special case of the

Instead, it is there derived from a set of axioms set up especially for the purpose. This, of course, does not necessarily make assumption (2) legitimate; it only enables us to substitute an examination of the validity of the axioms for a direct investigation of the assumption.[16] Surely any statement which is internally consistent can be derived from an appropriate set of axioms (it can be trivially derived from itself), and such a derivation need in no sense be a justification. Indeed, the axioms themselves must be abandoned if any necessary condition—for example, assumption (2)—can be shown to be invalid.

Now it is not at all difficult to construct examples in which the Neumann-Morgenstern index leads to results conflicting with plausible preferences. Assume that we have three alternative prospects to which the construction has assigned, respectively, the values 600, 420, and 60 utils and consider two lottery tickets offering the following gambles (I admit that the figures are set up so as to suggest introspective significance of a sort I question):

a: a 5/6 chance of winning the 600 utils with a consolation prize of 60 if you lose

b: a 1/6 chance of winning the 600 utils with a consolation prize of 420.

Using assumption (2), it is seen at once that the Neumann-Morgenstern construction would value *a* at 510 and *b* at 450, so that we *must* prefer *a* to *b* if we are not to be in conflict with it. Yet who is to say that preferring *b* to *a* is pathological? Is it unthinkable that some, or even many, will prefer the insurance value of having the 420-util situation in the hand to the 600 in the shrubbery, especially since it is the totality of the individual's possessions which is to be decided on? Nor is there any serious subterfuge involved in the use of utils—we can use bales of goods or money and construct the index values by the method of note 14 above.

The point is simply that the assumptions of the system, in Samuelson's happy phrase, "put a straitjacket on the person's preferences." Once he has made up his mind on a few things, the rest is decided for him by the rules. From his choices among some limited sets of items we know how he will react to the rest, and there is no apparent reason why choice should be so circumscribed in fact.

Other interesting and peculiar results follow from the Friedman-Savage analysis.[17] For example, they have shown that if a person exhibits a rational desire to invest money in both lottery tickets (or some other form of gambling) and insurance at the same time, assumption (2) requires that his income utility function exhibit diminishing marginal utility for some lower-income range and an intermediate or upper range, throughout which the marginal utility of income increases. The latter range has been interpreted by the authors as the income range which to the individual is the "no man's land" between his present and the next higher socio-economic class. Friedman and Savage have also shown this to mean that in the lower range the individual will tend not to be attracted by small gambles but will prefer, instead, a small chance of a large gain. In the other range mentioned above, however, he will be attracted strongly by small gambles. Certainly, these results

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Neumann-Morgenstern index, as shown in n. 14, while the well-known utility index constructions of Fisher and Frisch are based on a generalization of (i) to include riskless items.

There seems to be no plausible reason to consider either of these premises as characteristic of the attitude of every individual. The authors explicitly recognize the relevance of both of these properties for their construction.

[16] Moreover, if we examine axiom 3:C:b (p. 26) which the authors consider crucial (pp. 28, 29, and esp. 632), we find that although it is considerably more obscure than (2) (the authors indicate that they themselves are not certain of its intuitive meaning), the same doubts as to its universal validity as a description of consumer behavior seem to apply. Note that the Friedman and Savage list of the set of axioms used to arrive at (2) seems to be incomplete, since this condition is omitted (*op. cit.*, p. 288). Samuelson has indicated to me that he believes the difficulty goes deeper than this axiom.

[17] *Op. cit.*, pp. 293–303.

are not inconceivable in some cases (though the first set is meaningful only to those who believe in measurable marginal utility at all), but, on the other hand, they are not introspectively obvious. At any rate, they may cast further doubt on the universal validity of assumption (2).

III

Even if an individual's preferences are such as to be compatible with a Neumann-Morgenstern utility index, there remains the question whether the index is not unjustifiably arbitrary. In a sense any scale of measurement is arbitrary.[18] Thus, aside from inconvenience, need anything be wrong with the use of a measure of distance which varies as the square or as the reciprocal (for nonzero points) of the metric scale? Or is there even any inherent objection to the queer index we get by using the metric scale but with the 20- and 40-cm. points interchanged?

In so far as there is a one-to-one correspondence between the object (property) to be described and the index adopted, there would, on this view, be absolutely no basis for preferring one index to another. It is not my purpose to go into this, but we may note how convenience or custom can dictate the degree to which the choice of an index should be circumscribed. If the maximum among some group of items is to be found (e.g., the tallest in a group of men), it does not matter what index is employed so long as the magnitude of the index increases with the magnitude of the object. Had we insisted on employing an index which varied inversely with the size of the object, the minimum value of the index would have corresponded to the largest object, and this would be inconvenient or excessively unconventional. Thus, because the theory of consumer behavior involves problems of maximization, we call for a utility index which increases with preferences. More generally, where choice is concerned, two indexes are genuine substitutes where they both lead (give the highest number) in all cases to identical decisions—as between buying and not buying. This being the sort of problem in which the economist is interested, *any* index which increases with the (subjective) desirability of the object measured is a perfectly valid utility index; and in this sense any process, such as the Neumann-Morgenstern construction, which limits the acceptable index to any narrower set (in this case to the set given by eq. [1]), must establish arbitrary (and unnecessary) restrictions.

If we then accept the view that any index obtained from a valid index by a monotone transformation is also valid, those of the Friedman-Savage results mentioned at the end of the preceding section, which refer to the shape of the income marginal utility curve, lose all their meaning. The reason is that the conclusions in question are concerned entirely with the slope of the income utility curve, which can be changed in any way we wish by merely substituting some other index for the one we are using. Thus, from the point of view of the ordinalist, there is no difference between the statement that income rising by one dollar raises utility from 5 to 500 utils or from 5 to 6 utils. Only the sign of the derivative of the curve cannot change—but what other significance can there be to the slope of a curve drawn on a rubber surface?

The general viewpoint of Friedman and Savage has been made considerably clearer to me in recent correspondence; it is significant for the discussion of this paper that their position seems to have been misunderstood. Their primary object is not directly connected with the question of ordinal utility. Rather, they have adopted the following nonempty hypothesis about human behavior: There is for each individual some function (Friedman now suggests calling it the "choice-generating" function rather than the "utility function," as he did previously) satisfying assumption (2), which he will, in fact, maximize when making his decisions. The object of Fried-

[18] The viewpoint of this section appears closely related to that of Arrow (*op. cit.*).

man and Savage is then merely to deduce and examine some of the consequences of this hypothesis—a procedure to which there can surely be no objection. Indeed, the preceding section of this paper is partly devoted to a similar object, because I feel that the consequences of the hypothesis suggest that the preference patterns of most individuals will be in contradiction with it. Moreover, Friedman and Savage agree that the generating function is no more valid a utility function than any other obtained from it by a monotone transformation. That is, they subscribe to ordinalism in this sense. The only major difference remaining between us is the degree of credence which we are willing to place in the basic hypothesis—a question which, of course, cannot be settled on a priori grounds. Unfortunately, I have not succeeded in getting a similar clarification of the position of the other writers in question.

IV

If our only purpose is to find one of the indexes representing the person's predilections, a construction superficially resembling the Neumann-Morgenstern index but which may perhaps be expected to be in accord with preferences more generally, can be constructed as follows:

We take as our standard two particular prospects, b and c, which are, respectively, very desirable and very undesirable from the point of view of the person whose preferences are in question and which define the relevant range. Then for any prospect a, where a may represent either a certainty or a lottery ticket, find p such that the person is indifferent between a and $[b : p, c: (1 - p)]$. Having done so, we define our utility function uniquely by $U(a) = p$.[19]

We may then make the following observations:

1. Having taken b and c so that b is greatly perferred to c, if we assume the person prefers to have a greater chance of getting b in $[b:p, c:(1 - p)]$ he prefers p as large as possible), then the usual assumptions about normal preferences lead to the conclusion for any prospects d and e, $U(d)$ will be greater than $U(e)$ if and only if d is preferred to e; i.e., the index must then be in accord with the person's preferences.
2. Only a very simple system of axioms is required to assure conformity of the index with preferences. There is nothing to correspond to the elaborate analyses of Neumann-Morgenstern and Marschak, whose main function seems to be to argue (implausibly) that their index is the only one which is psychologically relevant. The axiom system implicit in my construction and remark (1) above can be given by:
   A. Continuity: for any prospects a, b, and c such that b is preferred to a, which is in turn preferred to c, there exists a probability p such that the individual will be indifferent between a and $[b:p, c:(1 - p)]$.
   B. There exists one b and one c (which are chosen as the basis for the index) such that b is preferred to c, and for any probabilities p and q, $p > q$, $[b:p, c:(1 - p)]$ is preferred to $[b:q, c:(1 - q)]$.
   C. For any prospects e, f, e', and f', if the individual prefers e to f, and is indifferent between e and e' and between f and f', he prefers e' to f'.
3. The index will generally be in conflict with the Neumann-Morgenstern index, since the basic condition (2) (see Sec. II above) will generally be violated. (Note that this would hold even if we had adopted the index $(U(a) = pv + (1 - p)w$ suggested in n. 20 above.)
4. This index does not strait-jacket preferences to quite the extent that the other does. Only after any particular situation is compared with the gamble between b and c can its "utility" be determined, and no situation can have its "utility" inferred from that of others. In particular, in the case of lottery tickets a and b described in the counterexample in Section II above, there is no reason to expect that my index will require that a be preferred to b, as does the Neumann-Morgenstern index.

[19] The aesthetic desire for one or two arbitrary constants can be satisfied by taking $U(a)$ as either vp or $vp + w(1 - p)$, $0 < w < v$. This will not affect the substance of the result, as the reader can easily see for himself by employing the axioms in remark (2), below.

THE RATE OF INTEREST AND THE MARGINAL PRODUCT OF CAPITAL: A CORRECTION

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MR. WILLIAM HAMBURGER and M. Edmond Malinvaud have called my attention to an error in a recent article on the rate of interest which I presented in this *Journal*.[1] The article in question dealt with the reasons for a possible discrepancy between the rate of interest and the marginal product of social capital. Such a discrepancy arises, as I pointed out, because an increase or decrease in the supply of capital alters the units in which previously existing capital is measured. In other words, an increase in capital, attributable, let us say, to new voluntary saving, usually leads to capital gains or capital losses. The increase in social capital, which necessarily makes allowance for the capital gains or losses, thus differs from the primary saving; and this means that the rate of interest differs from the marginal social product of capital. The former is equal to the ratio of the increase in social product to the primary saving, whereas the latter is equal to the ratio of the increase in social product to the increase in social capital.

Suppose, for example, that primary or autonomous saving takes place to the extent of $1,000.00 and that the new saving is invested in machines having a net yield of $70.00 per year. The rate of interest is then 7 per cent, and this rate, in turn, is equal to what I have called the "marginal private product of capital." The increase in machinery, however, will usually result in capital gains or losses for machines and other capital goods already in existence, and the change in social capital must take these gains or losses into account along with the primary saving. If capital gains occur to the extent of $400.00, for example, and if these capital gains are not consumed, then the increase in social capital is $1,400.00, compared with the primary or autonomous saving of $1,000.00. The marginal social product of capital—or perhaps it should be called the "marginal product of social capital"—is the increase in social product, or $70.00, divided by the increase in social capital, or $1,500.00. In the present numerical example the marginal product of social capital is thus 5 per cent, compared with a rate of interest of 7 per cent.

The last section of my article was devoted to a discussion of the welfare implications of such a discrepancy between the rate of interest and the marginal product of social capital, and this section contained a fundamental error. I suggested that the discrepancy between the rate of interest and the marginal product of social capital is analogous to the familiar example from price theory in which the return to a factor of production differs from that factor's marginal social product. Thus, if the rate of interest or the marginal private product of capital differs from the marginal social product, I argued that the quantity of capital tends to differ from the optimal quantity, just as the quantity of labor differs from the optimal quantity when wages differ from the marginal social product of labor.

My argument in this regard was based upon the erroneous belief that the marginal product of social capital, as I have defined it, measures the rate at which the economy as a whole can substitute future income in perpetuity for present consumption. Since the rate of interest measures the rate at

[1] L. A. Metzler, "The Rate of Interest and the Marginal Product of Capital," *Journal of Political Economy*, LVIII, No. 4 (August, 1950), 289–306.

which each individual saver can substitute future income for present consumption, a discrepancy between the rate of interest and the marginal social product of capital implies, according to my paper, that the social rate of substitution between present consumption and future income differs from the private rate of substitution. "Thus," I said, "if the rate of interest differs from the marginal product of capital, the private rate of substitution between present and future consumption will necessarily differ from the social rate of substitution, and the quantity of capital will accordingly differ from the optimum."[2]

As a result of conversations with Mr. Hamburger and M. Malinvaud, I now realize that all of this is a mistake. The basic error of my argument is the assertion that the marginal product of social capital measures the rate at which the economic system can substitute future for present consumption. This social rate of substitution between present and future is not measured, as I had supposed, by the marginal product of social capital but by the rate of interest itself. Consider, for example, the preceding numerical illustration. When new primary saving takes place to the extent of $1,000.00, the amount of current consumption foregone is exactly equal to this amount, even though the supply of capital, including the capital gains, is increased by $1,400.00. In other words, the capital gains or losses have nothing to do with the extent to which current consumption is reduced through new saving. The economy as a whole has given up $1,000.00 of potential current consumption in exchange for $70.00 of additional income per year in perpetuity. The social rate of substitution between present and future is thus equal to the rate of interest and not to the marginal product of social capital. This means that a discrepancy between the rate of interest and the marginal product of social capital does not imply a corresponding discrepancy between the social and the private rates of substitution. The total quantity of capital may therefore be an optimal quantity, at any given time, even though the rate of interest differs substantially from the marginal product of social capital.

The foregoing correction of my earlier views presupposes that capital is desirable only because of the income which it yields. If capital is wanted for its own sake, apart from the income which it yields, then I suspect that a discrepancy between the rate of interest and the marginal product of social capital may have some significance from the point of view of welfare economics. But this is a question which I did not discuss in my original paper, and it cannot be treated adequately in this brief note.

[2] *Ibid.*, p. 303.

M. ALLAIS'S THEORY OF INTEREST

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STUDENTS of economic thought have frequently lamented the peculiar infertility of the intellectual soil of France in regard to economic theory, at least since 1870. There have been signs recently, however, of a revival of interest in economic theory in that country, and certainly one of the most interesting stars in this rising constellation is Maurice Allais, whose work entitled *Économie et intérêt*[1] is the principal inspirer of these reflections.

Reading M. Allais is rather like going for a walk with a highly intelligent and active fox terrier. No alley is left unexplored and no rabbit unchased, even through several pages of footnote. The net result is a certain mental exhaustion and a somewhat confused picture of the whole excursion; moreover, the same rabbit is continually turning up again and having to be chased anew. In spite of its diffuseness and prolixity, however, there is such *joie de vivre* in the performance that one can forgive a good deal of long-windedness. What is harder to overlook is Allais's excitement at being the first that ever burst into what turns out to be, after all, a pretty well-charted sea. Indeed, one of the most interesting items in the book is the list of authors and books cited;[2] it is a curious commentary on the isolation of French economics from the general stream of European and American thought. Allais is familiar with Irving Fisher; indeed, the work is gratefully dedicated to him, and by and large his interest theory follows the familiar Fisherian lines. He also knows something about Keynes, though one doubts whether the real significance of the *General Theory* has been assimilated. But there is absolutely no mention of Wicksell, or of Knight, and, strangest of all, only the most cursory reference to Walras.

The theoretical analysis consists of two main elements: a theory of the determination of the "pure" rate of interest in the general equilibrium of the stationary state and a theory of "welfare economics"—that is, of the maximization of the social product. There are some good discussions of the distinction between the optimum of allocation (*gestion*) and the optimum of "structure" which includes an optimum distribution. The most striking, and most dubious, conclusion of this argument is that the allocation of resources, no matter what the distribution of income, as between provision for current and for future needs is at an optimum when the pure rate of interest is zero —all this presumably in a given state of techniques. This conclusion seems to be based on the further assumption that there is no "real cost" of "waiting," since in a stationary state waiting simply involves a redistribution of income between the young and the old and hence does not come under the category of allocation but of distribution. There is also a certain amount of the theory of money, consisting of a form of the "real balances" theory. There is a certain amount also of the theory of the relation of various interest rates and the operations of the financial markets. Then, to crown the structure, there are some thought-provoking policy suggestions.

The policy suggestions are elaborated

[1] 2 vols. Paris, 1947. Pp. 800.

[2] The provision of these lists is a practice which may be commended (by reviewers) to all authors. Allais seems to have invented a peculiarly charming game for looking up references. The footnote reference at the bottom of a page yields only a number, which refers the reader to a table at the back of the book, which yields a combination of letters, which refers the reader to yet another table, which contains the title of the work referred to, the page reference, however, being in the *first* table. (This is easier done than said.)

more fully in another work by Allais, *Abondance ou Misère*,[3] which is partly an eloquent economic tract directed at the situation of France in 1946 and partly an expression of his general economic philosophy, which is a curious combination of Henry George, Gesell, and Hayek. The name of his philosophy is *le socialisme concurrentiel*. (The French are fortunate in having a word for "competition" which possesses exactly the right overtones of co-operation. Perhaps the best English equivalent would be "free enterprise socialism"—a coinage which combines the best of all worlds almost as happily as that of Mrs. Eddy.) We are promised a book or two on this theme; I do not know if they have yet been published. In outline, however, the philosophy involves free markets, with plenty of trust- and union-busting, depreciating currency, and 100 per cent reserves in the banking system, plus the appropriation of all scarcity rents and the nationalization of land. The mixture is weird enough to hit a jackpot, and, if Allais were not a professor, he might almost succeed in starting a movement.

It is not, however, with the practical aspects of Allais's proposals that I am concerned here but rather with certain defects of his theoretical structure—defects which are, unfortunately, the basis for many of his practical proposals. Allais's work is another demonstration that mathematics and economics, though good complements, are very imperfect substitutes. Mathematics can manipulate parameters once formulated and draw conclusions out which were already implicit in the assumptions. But skills of the mathematician are no substitute for the proper skill of the economist, which is that of *selecting* the most significant parameters to go into the system. Much work on the theory of interest is hampered at the start by its unquestioned assumption that "the" rate of interest, or even some complex of rates, is a suitable parameter for use in the construction of systems of economic relationships, whether static or dynamic. This is an assumption which is almost universally accepted and yet which seems to me to be very much open to question. My reason for questioning it is that the rate of interest is not an *objective* magnitude of the economic system except in the highly special case of perfect foresight—a case which literally *never* occurs in practice, however closely it may be approximated. The rate of interest is not a "price"; its dimensions are those of a rate of growth, not of a ratio of exchange, even though it is sometimes carelessly spoken of as a "price of loanable funds."[4] What is determined in the market is not strictly the rate of interest but the price of certain "property rights." These may be securities, either stocks or bonds, or they may be items or collections of physical property. Each of these property rights represents to an individual an expected series of future values, which may be both positive and negative. If this expected series of values can be given some "certainty equivalent"—that is, either if they are absolutely certain or if there is some series which is certain and which is regarded as exactly equivalent in preference to the uncertain series—then the market price of the property determines a rate of interest on the investment. This rate of interest, however, is essentially subjective and depends on the expectations of the individual; the objective phenomenon is the present market price of the expectation.

It is only the fact that the fulfilment of some expectations seems practically certain that gives us the illusion that there is an objective rate of interest determined in the market. But in strict theory there is no such certainty, even for gilt-edged bonds; and when the uncertainties of life, inflation, and government are taken into consideration, it is evident that this theoretical uncertainty is also a matter of practice. What is more, we cannot assume either that there are any "certain equivalents" of uncertain series,

[3] Paris: Libraire des Medicis, 1946. Pp. 131.

[4] If I borrow $100 and return $105 after one year, it is quite proper to say that the 1.05 next year's dollars per this year's dollars is a "price"; it is a genuine ratio of exchange. But the rate of interest (5 per cent per annum) is not a price in this sense; it is a rate of growth of capital value.

for it is the very uncertainty of the future which constitutes its special quality. What this means is that it is quite illegitimate even to begin an interest theory by abstracting from uncertainty or by assuming that this can be taken care of by some "risk premium"; still less is it legitimate to construct a whole theory on these assumptions, as Allais does, without any discussion of the problems which uncertainty creates. What principally governs the desired structure of assets on the part of the individual is the perpetual necessity to hedge—against inflation, against deflation, against the uncertainty in the future of *all* assets, money included. It is these uncertainties, therefore, which are the principal governors of the demand and supply of all assets without exception, and no theory which abstracts from these uncertainties can claim much significance for economics. Hence, Allais is attempting to do something which simply cannot be done, because it is meaningless—to construct a theory of "pure" interest devoid of premiums for risk, liquidity, convenience, amortization, prestige, etc. There is simply no such animal. The observed facts are the prices of assets of all kinds. From these prices we may deduce the existence of purely private rates of return. The concept of a historical "yield" also has some validity. But none of these things is a "rate of interest" in the sense of something determined in a market mechanism.

This search for a black cat that isn't there leads Allais into several extended discussions of almost meaningless and self-constructed questions, which even color his policy recommendations. Thus he is much worried about the "fact" that a zero rate of interest means an infinite value for land, land representing a perpetual income, which capitalized at a zero rate of interest yields an infinite value; it is this worry that is the source of his policy recommendation of land nationalization. This is a delightful example of the way in which mathematics can lead to an almost total blindness to economic reality. In fact, the income from land is no more perpetual than that from anything else and no more certain. No matter what the shape of any particular income stream, it can be amortized to make it perpetual—and land depreciates just like anything else. We might draw a conclusion from this that a really effective zero rate of interest in a world of perfect foresight would lead to an infinite inflation; but, then, perfect foresight would reduce the period of money turnover to zero anyway and would give us an infinite price level willy-nilly! This conclusion is interesting for the light it throws on the complete uselessness of the "perfect foresight" model but for little else. In fact, of course, the element which prevents both prices from rising to infinity and (private) money rates of interest from falling to zero is uncertainty—precisely the factor which Allais has abstracted from. Another of these quite unreal problems which worries him a great deal is why there is always a positive *real* rate of interest, the answer being of course that there isn't! In one place Allais himself recognizes that the rate of increase of the price level in France, at least since 1913 (about 13 per cent per annum), has averaged considerably more than anything which could be thought of as a "pure" money rate of interest and that therefore, by Allais's own showing, the "real" rate of interest has been negative, on the average, over this period! It is perfectly easy for modern societies to achieve zero or negative real rates of interest; and, if it be asked why this does not result immediately in hyperinflation, the answer is that sometimes it does if the money supply is flexible but that normally the ever present uncertainty prevents it. We never know what the real rate of interest is going to be on any loan, no matter how rigid and secure the contractual obligation, because we do not know what is going to happen to the price level. Uncertainty, therefore, is implicit in the very concept of a real rate of interest.

Allais reflects also another weakness of "pure" interest theory, which is a failure to appreciate the true significance and function of financial institutions and of "interest" as opposed to "profit"—interest in this

sense being the rate of growth of value in "securities," especially bonds, and "profit" being the rate of growth of value of items or combinations of real capital. Even if there were no financial institutions or financial instruments (securities) in a society, there would still be a problem of real-asset valuation; and there would be subjective expected rates of profit and historical yields on past, completed investments. In such a society, however, given the institution of private property, everyone would have to administer his own property. The main purpose of the financial system is to separate "ownership" (i.e., equity) from "control," or administration, that is, to enable some people to own assets which they do not control, and others to control assets which they do not own. This arrangement is necessitated because there is very little, in the processes by which ownership was historically determined through inheritance and saving, to insure that those who own the resources of society are those who are most capable of administering them. Interest, in the sense of an income received by the owners of securities,[5] is the price which society pays for correcting a defect in the otherwise fruitful institution of private property. It is, of course, desirable that the price should be as small as possible—that is, that there should be as little economic surplus as possible paid to nonadministering owners. It is quite possible, however, that this "service" has a positive supply price in the long run, and thus that, even in the stationary state, interest, as distinct from profit, is necessary to persuade the nonadministering owners to yield up the administration of their capital. There is certainly nothing to warrant Allais's conclusion that the optimum-welfare rate of interest is zero. In a progressive society, of course, the problem is further complicated by the fact that conditions in the financial markets affect the type of goods which are produced and hence the rate of accumulation. Allais never suggests, however, that a zero rate of interest is optimum in a progressive society; indeed, he has no adequate discussion of the dynamic problem at all.

The absence of adequate discussion of the dynamics—and hence the stability—of equilibrium models is a very serious defect in any theory. Equilibrium concepts are interesting mainly for the light they throw on the processes of disequilibrium and adjustment. We always need to ask what will happen if the system is not in equilibrium, what kind of pressures for change are created, and what variables "give" under this pressure. Otherwise we cannot know what are the true "variables" of the situation and what are the "givens." What "imperfection" in markets frequently means, for instance, is that it is not prices that "give" when there is a disequilibrium situation (say, an excess of demand or supply) but some other variable—even tastes or techniques, which are usually assumed to be constant. In financial markets this matter of imperfection is of great importance. We are all familiar, in this country at least, with the phenomenon of "capital rationing," and a theory which abstracts from this phenomenon has little claim to much generality. There is great need for a really general interest theory; unfortunately, one cannot feel that Allais has pushed matters much beyond where Irving Fisher left them. In this regard his theory is even less satisfactory than that of Walras, who always had a healthy sense of the importance of the "tâtonnements" by which adjustments toward equilibrium were made.

I have been critical, and perhaps unduly critical; it may be because I expected too much. Allais illustrates all too well the depressing law that reading and thinking, on the one hand, and writing, on the other, are strictly competitive uses of time. He is an extremely prolific writer; in addition to the

[5] There are of course differences in the degree to which the capitalist gives up responsibility for administration when he transforms his capital into securities; more is given up in the case of bonds than in the case of stocks. *De facto*, however, even if not *de jure*, the distinction is only one of mild degree and is neglected here.

above works, he has written a monumental volume entitled *À la recherche d'une discipline économique* (published by the author, 1943) into which I confess I have only dipped, and a long list of other works which I have not yet seen. He is a provocative and original thinker. The mature product of his thought may be very important indeed. The principle of interest theory that maturing involves waiting is, however, a sound one; and one hopes that the extreme imperfection and uncertainty which exist in the capital market of the intellect, and which force all our periods of production to fall far short of the optimum, will not, in this case, be too costly.

BOOK REVIEWS

A Reconstruction of Economics. By KENNETH E. BOULDING. New York: John Wiley & Sons, Inc., 1950. Pp. xiii+311. $4.50.

It will help, I believe, to summarize, at the beginning, the basic "vision" of this complicated little book. Dr. Boulding's "Reconstruction," expressed somewhat more cautiously than by its author, boils down to two main points. First, he has discovered that the motivation of the firm is not adequately described by maximization of short-run net revenue. The desire to survive and to accumulate assets must also be considered. Second, the last of the book, on "macroeconomics," is a rediscovery and elaboration of the "Cambridge" concept of variations in the "unspent margin" of cash, with its repercussions upon velocity, output, and (to me) *short*-period distribution.

These are valid insights, though one may question whether they constitute a revolution, and they obviously are capable of much worthwhile development. But, when one comes to the use Boulding actually makes of them and to the analysis he develops, the results are disappointing. Despite grandiose terminology and complicated exposition, the shifts in emphasis, when valid, are scarcely unique; and the proportion of error is high. But let us first outline the book in general.

The first two chapters set forth an "organic" approach to the economy as an "ecological" system—one of competitive-complementary organisms. Various population theory models are given, and the ground is laid for a theory of the relation of asset accumulation to the policy of a firm, which is Boulding's real concern.

Chapters iii–vii are a fairly straightforward, workman-like application of this asset theory to various "microeconomic" problems of value and production. These chapters are perhaps the best or at any rate least controversial parts of the book, though they did not seem to me to be too closely related to the preceding "ecology."

Mathematical theorists will doubtless find much to occupy them here and perhaps some slips. I wish, however, to call attention merely to two inadequacies of the fundamental model. First, Boulding gives the impression that the only way anyone makes profits is by the speculative resale of assets; and, though this assumption is formally relaxed in later stages, this curiously one-sided approach colors his whole outlook.

The second inadequacy is that *changes* in the production function are almost totally omitted —entirely so (and astonishingly) in a section entitled "The *Dynamics* of Production" (italics added). Boulding is extremely chary of references; so one cannot really tell what he has read and what not. But apparently Schumpeter's *Theory of Economic Development* and his *Capitalism, Socialism and Democracy* have wholly passed him by. How else can one explain his remarks that economists "should" have developed "a discussion of the forces which determine the birth, growth, and death of the firm." Perhaps pure, mathematical economics has somewhat ignored these problems, but they have scarcely been forgotten in the rest of our field.

With chapter viii, we enter upon the theory of consumption, while chapter ix ties up the whole "equilibrium" model by way of introduction to the second, or "macro"-economic section of the book. These two chapters contain some sound insights and also a great deal that is superficially startling. Thus: "Consumption in its literal sense means destruction . . . and far from being desirable is to be avoided as much as possible." But Boulding is too sensible a man really to be holding up, as our economic ideal, a miser brooding over "assets." The whole thing turns out to be nine-tenths semantics. Again one learns that a "wage payment is not income" and again reassuringly discovers that it is all proof "by definition."

The second, or macroeconomic, half of the book is the most interesting to me. In organization it is clear enough. First, a general statement of the reasons for studying aggregates—and its pitfalls. Next, the elaboration of a macroeconomic model of "distribution," using Boulding's highly personal definitions and putting great stress on "assets." Finally, the application of this model to various topics, especially distribution, taxation, and employment.

Only a full-scale article could do justice to Boulding's complicated analysis. From a multitude of points I shall choose only one: the "Widow's Cruse" theory of profits. Boulding writes flatly that "the more business distributes in interest and dividends, the more will be returned to it in profits to distribute; the less it so distributes, the less there will be to distribute." As authority he cites Keynes's *Treatise*, and it will be interesting to track down in just what way Boulding has misunderstood Keynes.

Keynes wrote (*Treatise*, p. 139): "If entrepreneurs choose to spend a portion of their profits on consumption . . . the effect is to *increase* [italics Keynes's] the profit on the sale of *liquid consumption-goods* [italics mine]. This follows from our definitions, because such expenditure constitutes a diminution of saving. . . . Thus however much of their profits entrepreneurs spend on consumption, the increment of wealth belonging to entrepreneurs remains the *same as before* [italics mine]. Thus profits . . . are a widow's cruse which remains undepleted however much of them may be devoted to riotous living."

In other words, Keynes merely says that profits on *consumption* goods will increase and total profits remain the *same*. But Boulding erects this into a statement that increased (proportional) distribution of profits will *increase* the total of *all* profits in the aggregate. What has happened here?

The answer is quite simple. In the passage quoted from the *Treatise* Keynes is tacitly assuming full employment and no increase in MV. Under such assumptions, while decreased saving raises profits in the consumption goods industries, it must also *lower* them in the investment goods industries. The *net* size of total profit remains unaltered. Keynes, however, did not bother to spell all this out in the *Treatise* passage, and Boulding, seizing only upon the *consumption* side of the picture, generalizes the increase into a universal theory of profits *as a whole*.

Boulding's version would be valid only if there were (*a*) an increase in M or V, (*b*)—if we want a "real" increase—unemployment, and (*c*) appropriate ideological and institutional conditions. One can then, indeed, see that in the depths of depression an increased distribution from dividends (if there were any) might induce dishoarding or, possibly, be insured via forced borrowing. With increased MV, if confidence conditions were otherwise not too bad, and were not impaired by the measure itself, a general expansion might indeed be started. But exactly the same thing would be true of increased "distribution" by "households." Boulding's flat, virtually unqualified statement is one of the most outstanding examples of unwarranted generalization which I have ever encountered.

Furthermore, the doctrine could be used as a foundation for a general attack upon corporate saving the effects of which should surely be considered by a writer who, like Boulding, now admits the possibility of secular *inflation* (though one learns with interest that in the United States "there has been no secular trend in the price level for well over a century").

In this survey I have by-passed most of Boulding's proofs by definition, but a few samples will indicate the general method of the book. On page 239 it is implied that the marginal efficiency of capital "depends" "on the state of mind of the capitalist class." But is this state of mind a purely *ad hoc* autonomous force? Again: "There cannot be any long run future for business savings" because "in the stationary state" there cannot be "any long run business accumulation." But *why* do we have to be in the stationary state? Boulding nowhere answers or even considers the point.

In summary, I found some useful insights in this book and some which were not. Mostly, however, one gets the effect of meeting a lot of old friends in rather flashy new clothes.

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The Dynamic Economy. By HAROLD G. MOULTON, with the collaboration of FRANK PALMER. Washington: Brookings Institution, 1950. Pp. viii+238. $2.00.

Dr. Moulton's volume can be viewed as (1) an interpretative analysis of "the factors and forces which have been responsible for America's extraordinary economic development" (p. v); as (2) propaganda for the system of private enterprise; and as (3) a play.

1. As an interpretation of American economic development, it presents a familiar picture. Inventions and inventors dominate the story of our progress, with lesser roles assigned to businessmen (mostly captains of industry) and natural resources. However, there is really very

little analysis in the volume; it is more an unsystematic chronicle of events and opinions. Any brief chronicle must be impressionistic, but it is hard to justify such choices as the substitution of quotations from Henry George for an analysis of the depressed 1870's (Act I, scene 4) and the utterly inconclusive conversations with Samuel Gompers and Senator Sherman (Act I, scene 5).

Not only does the volume lack a coherent theme or an analytical scheme of interpretation, but the conventional emphasis on inventions seems to me quite misleading. It is misleading causally: inventions are described in the *Patent Office Gazette* and offer a flimsy basis for the sustained rise of the United States relative to the world; and inventions are not chance events. It is also misleading quantitatively, for dramatic inventions have probably played a modest role in our economic growth. The social organization and in particular the system of private enterprise were the basic sources of our economic progress, and the development of techniques and resources were simply two avenues along which the unleashed energies of a multitude of ordinary men worked. Whether this is right or wrong, one should also (although Moulton does not) try to reckon the effects on our economy of governmental policies and of foreign developments.

2. As propaganda, I fear that the volume will earn few new recruits for the cause of private enterprise. Propaganda should appeal to the young, not congratulate the old, and the young wish to improve things. (It was a serious objection to the creed of laissez faire, once it succeeded, that it assigned little work to those inevitable and indispensable people who wish to do good.)

Moulton offers neither trenchant criticism nor bold proposals. The treatment of monopoly is hardly satisfactory (pp. 228–30); labor unions are left alone; tariffs are ignored; etc. In fact, only a dislike for federal deficits and a rejection of technological unemployment rise above the dull mosaic. The epilogue on the future does not go beyond these instructions: First, to preserve our natural resources, which is probably poor advice. Second, to increase output per man, which is only arithmetical advice. Third, "a constantly broadening distribution of the national income" (p. 230)—advice as ambiguous in content as in wording. And, fourth, the maintenance of fiscal stability, which is good advice.

3. As a play—well, economists can't be good at everything. Still, they should not be this ineffective at anything: a series of stilted speeches are spoken by characterless people, without benefit of plot or action. Here is a sample (pp. 108–9):

> ECONOMIST (*in doubtful tone*): There is just one thing that troubles me about Mr. Ford's policy. He can't sell below the cost of production without going broke. It is easy to say we must sell at say $400, but how can it be done? He has to pay the market price for his materials; he has to pay the going rate for wages and salaries. How, then, is it possible to cut the price of cars in two?
>
> BUSINESSMAN (*slowly*): Improved methods such as the introduction of an assembly line, can perhaps do a part of it, but only a part. Involved in this idea there seems to be another principle, one which I find very challenging. (*Pauses.*)
>
> TEACHER: What is that principle?
>
> BUSINESSMAN: By means of a low price—no matter what the exact figure may be—Ford may get hundreds of thousands of buyers for his cars. Then he won't have to make as much profit on each car to do very well by himself.
>
> ECONOMIST (*speaking very slowly*): I think I now begin to see the real possibility. First, large-scale operations reduce the cost per unit—because they permit internal management economies and spread the fixed overhead costs over a larger volume. Second, they lessen the necessary profit per unit. One can make as much money on a high volume low profit per unit basis as on a low volume high profit basis.

GEORGE J. STIGLER

Columbia University

Presidential Agency: The Office of War Mobilization and Reconversion. By HERMAN MILES SOMERS. Cambridge: Harvard University Press, 1950. Pp. xiii+238. $4.50.

A thorough discussion of the history and administrative experience of the Office of War Mobilization and Reconversion is extraordinarily opportune and valuable at this time when we are again turning toward economic mobilization for war. The issue now is whether, following Mr. Baruch, we should set up at the start an integrated program for economic mobilization under a comprehensive and powerful co-ordinating agency or whether we should rely on existing agencies and administrative machinery—at least until the need for drastic reorganization becomes more definitely apparent.

Professor Somers' answer would be, I am

sure, that we should waste no time in establishing a co-ordinating agency like OWMR. He goes even further by recommending that such an agency be established even in peacetime to assist the President in the planning of programs and in the co-ordination of public policy. He says: "The situation which faced the President during the war and which graphically called for such an instrument as OWM is in essence perennial, regardless of general government organization. The fundamentals of operative coordination are no different in time of peace than in time of war" (p. 205).

Somers' book is a study in the administration and organization of economic policy in war and peace. More generally, it is a study of the administrative difficulties of the President. It traces the problems of the co-ordination of war programs before OWM, records the events leading up to the establishment of OWM, and outlines the history of that agency through its various stages until its dissolution in 1946.

The story is told in considerable detail. The author was intimately familiar with the agency through his own connection with it and through his association with many of its officials. The story contains not only factual details but adroit analyses of problems and intimate glimpses of personalities in their official setting.

In the final chapter, "The Continuing Need for Program Coordination," Somers describes the problems of the presidency and traces the history of attempts to solve this problem through the creation of such agencies as the Bureau of the Budget, National Emergency Council, Central Statistical Board, National Resources Planning Board, Office for Emergency Management, Council of Economic Advisers, and others. He concludes that existing agencies are inadequate and that the President sorely needs a new staff unit, the functions and operations of which would be analogous to OWMR. The author would name the new agency "Office for Program Coordination."

HOWARD R. BOWEN

University of Illinois

Employment and Compensation in Education. By GEORGE J. STIGLER. ("Occasional Papers," No. 33.) New York: National Bureau of Economic Research, Inc., 1950. Pp. v+77. $1.00.

Professor Stigler's interesting little brochure addresses itself to two major problems: (1) a careful analysis and description of supply, demand, and earnings *within* the two main branches of the educational profession (i.e., elementary-secondary education, on the one hand, and higher education, on the other) and (2) a brief discussion of salaries as *between* education and other comparable occupations. Precise determination of relative earnings of female grade- and high-school instructors is severely handicapped by lack of information on salaries paid by industry to women of strictly comparable skill and training. The limited data available indicate approximate equivalence between commercial pursuits and public school teaching (pp. 26–28). Earnings comparisons between higher education and other professions are complicated not only by the understandable reluctance of universities to divulge details on professors' salaries but by such numerous and somewhat arbitrary adjustments as allowances for pensions, outside earnings opportunities, pecuniary value of vacations and sabbaticals, age and cost-of-living differentials, etc., which add approximately 50 per cent to the annual money wages of academicians (pp. 55–62). So adjusted, *average* prewar net advantages of college teaching exceeded dentistry and about equaled law or medicine (p. 63).

Studies of comparative earnings are, however, fundamentally uninteresting unless reason can be shown for the existence of sociological barriers to occupational mobility. Otherwise, and in the long run, each occupation, public or private, will be staffed by the relative levels of competency indicated by the relative levels of real wages. Whether real wages as between education and other lines of activity which, at first glance, appear comparable are substantially equivalent, as Stigler tends to show, or are grossly unequal, as the articulate protests of professional educators would lead one to believe, is of no importance for allocative efficiency so long as the machinery of choice on the labor market is in good working order. In the short-run context, equilibrium between ability and earnings tends to be disrupted by cumulative inflation (indicated on pp. 22, 46, 60). As a matter of public policy, the choice between appropriate increases in teachers' money wages and perquisites or gradual erosion in the quality of teaching personnel depends on the social value attached to education in a modern democracy.

PROCTER THOMSON

University of Chicago

Creation of Income by Taxation. By JOSHUA C. HUBBARD. Cambridge: Harvard University Press, 1950. Pp. xi+239. $4.00.

This book analyzes the income-generating effects of increasing the size of the budget while keeping it in balance. No claim is made that taxation apart from the spending of the proceeds creates income. The study is limited to periods of "underemployment equilibrium." The last part of the book compares alternative income-creating policies.

A clear distinction is made between the initial income increment and the ultimate income creation resulting from a taxing and spending policy. In addition to the simple multiplier, the tax multiplier (which takes into account taxes upon the successive income increments) is introduced.

In order to move beyond the familiar case in which the value of the simple multiplier is unity, an analysis of this type must make specific assumptions concerning the effects of fiscal policy upon private investment. It is in this area that the book is weakest. Changes in investment are treated as movements along a given marginal efficiency of capital schedule, and, through the use of varying assumptions about the elasticity of this schedule, apparently definitive results are achieved. Leaving aside the more general theoretical limitations involved in the use of the marginal efficiency schedule, several objections must be made to this procedure.

First, fiscal policy certainly affects business expectations and thus shifts the marginal efficiency schedule. To assume away this shifting seems to ignore the whole Keynesian emphasis upon psychological components. The author later admits the probability of shift and the consequent unpredictability of the results.

A second, and more serious, weakness lies in the use made of the concept of elasticity. The elasticity of the marginal efficiency schedule is used to indicate the direction in which total return to investors will change as investment is increased or decreased. The amount of private investment, in turn, is held to be determined by the total return to investors. While it is perhaps helpful to speak of the elasticity of this schedule in very general terms, this application does not seem acceptable. There is no direct relationship between the marginal efficiency of capital and the total return to investors. The basic confusion here seems to stem from a failure to recognize the peculiar difficulties involved in the construction of a demand curve for capital. The marginal efficiency schedule cannot be treated as the demand curve for money capital in the ordinary sense, the only sense in which the use made of elasticity becomes meaningful. In addition, the total return to investors determines the amount of private investment only if all decisions are made by one authority. Unfortunately, many of the conclusions which are reached depend upon the above method of analysis and are valid only upon its acceptance. These conclusions include the interesting recommendation that the government's policy should be one of taxing and lending the proceeds without interest to private investors when the elasticity of the marginal efficiency schedule exceeds unity.

The budget-balancing method is recommended as appropriate public policy only in combating secular unemployment. Deficit spending is recognized as more efficient anticyclical policy, since the income-creating effects are stronger in the short run. The major argument advanced in favor of the balanced budget over the long run is that deficit spending requires continual increases in the interest-bearing debt. If it is admitted that deficits need not be financed by increased interest-bearing debt, the argument is severely weakened. A stronger case could have been made on other grounds.

J. M. BUCHANAN

University of Tennessee

Die Belastung durch die persönliche Einkommensteuer in Deutschland, England und den Vereinigten Staaten. By RUDOLF BINDER. ("Kieler Studien," No. 11.) Kiel: Instituts für Weltwirtschaft an der Universität Kiel, 1950. Pp. vii+196. DM. 15.

This monograph examines the personal income-tax system in West Germany, England, and the United States with the purpose of determining the burden of this major revenue producer upon individual citizens in the three countries. Primarily, it is a straightforward presentation of facts combined with the essential analysis and interpretation. No attempt is made to estimate over-all fiscal pressures (including both tax burdens and benefits from public services) or even total tax burdens.

The burden of the personal income tax on citizens at all income levels is much lighter in

the United States than on similarly situated citizens in the other countries. The load is heavier in West Germany than in England except on citizens at the very highest income levels (which are few in either country).

The narrowness of the tax base in the United States is perhaps more significant than the lower nominal rates. Higher personal exemptions, more and greater allowable deductions, and the exclusion of nonpecuniary elements of income considered taxable in other countries remove a larger portion of national income from the income-tax base. The English tax coverage is more limited than the German largely because of the special earned income exemption (one-fifth of earned income up to £2,000).

The author correctly emphasizes the fact that useful comparisons of tax burdens can only be made among individuals or families. The ratio of tax revenue to national income is of no value in determining relative tax effort if the principle of progression is accepted. The higher per capita income and the more symmetrical distribution cause this ratio in the United States to be greater than in West Germany in spite of the lower rates, higher exemptions, and other tax-base limitations. This situation exemplifies the fiscal plight of low-income countries and necessitates their greater dependence upon indirect taxes.

Subventions (family allowances, food subsidies, etc.) are held to reduce the load of the income tax in England. While these as well as all other government expenditures and all other taxes must be included in any estimation of comparative fiscal pressures, it is difficult to understand why they are singled out in a work which is specifically limited to personal income-tax burdens. The fact that they constitute measurable additions to personal incomes does nothing to warrant their inclusion.

In addition to its value as a comparative study, this monograph provides a useful source of current information, especially concerning the West German system. The 1950 changes in the German tax law are outlined, although the main body of the work compares the systems in effect December, 1949. Twenty-eight tables and twenty-six charts facilitate reference. The charts may be of some value to those unable to read the German text.

J. M. BUCHANAN

University of Tennessee

The United States and the Restoration of World Trade. By WILLIAM ADAMS BROWN, JR. Washington, D.C.: Brookings Institution, 1950. Pp. xiii+571. $5.00.

Williams Adams Brown, Jr., served as an observer of the Brookings Institution at the Geneva and Havana conferences on the International Trade Organization. In addition, he has examined the document collection on commercial policy of the United Nations at Lake Success. With this background, Brown has fashioned a book on the International Trade Organization. After detailed and careful examination of the pros and cons, he concludes that the best interest of the United States would be served by ratification of the charter.

The United States and the Restoration of World Trade is not a brief. On the contrary, it is a scholarly analytical study—frequently, it must be said, repetitive and dull. It presents an account of the negotiation of the charter, an analysis of its provisions, and a dispassionate appraisal of the net result. The usefulness of the book as a reference document is enhanced by the inclusion of a 170-page appendix consisting of an annotated and rearranged text of the draft charter.

Particular merit attaches to the treatment of the conflict between American policy in trade and in the field of agriculture. Here Brown is franker than Clair Wilcox, with whose more sprightly *A Charter for World Trade* the book will inevitably be compared. The staff and alumni of both the State and the Agriculture departments necessarily tread warily in this controversial area, whereas similar restraint is not required of commentators who live outside the reach of interdepartmental retaliation.

A student of mine once objected to regarding a discussion of the draft charter of the ITO as economics and suggested that it belonged to the more abstract "history of ideas." Brown's restrained support for the charter does much to confirm this view. The negotiation was an attempt to find a consensus on economic questions of commercial employment and development policies and their relative priorities. Although Brown claims that the draft charter has "unity and coherence," his insistence that the balance among the provisions was more important than the compromise reached on any one chapter makes clear that no such consensus existed. Accordingly, the draft charter provides not so much a set of rules for world trade as a forum in

which world trade practices can be discussed within a very loosely drawn framework of conflicting principles.

There is merit in the International Trade Organization draft charter on this basis, though it is difficult to be enthusiastic about the creation of more machinery to handle unresolved differences of interest and thought. The analogy for world federalists who ignore problems in their enthusiasm for reshaping machinery is one which kept recurring to me.

C. P. KINDLEBERGER

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Highways in Our National Life: A Symposium. Edited by JEAN LABATUT and WHEATON J. LANE. Princeton: Princeton University Press, 1950. Pp. xvi+506. $7.50.

This interesting symposium is a product of the Bureau of Urban Research of Princeton University. Its authors are, respectively, a professor of architecture and a historian, and consequently the material reflects the primary interests of these professions. The contributions cover a wide range of topics. For example, there is one on trade routes to China in ancient times, and there are several dealing with aspects of modern concrete highway design. Each of the forty-five essays has been written by a specialist, the majority being from the academic ranks, but with a good sprinkling of public administrators and of practicing architects and engineers. The objective is to present the significance of American highway development from a broad point of view. In my opinion, this is a worth-while purpose. Motor transport has been singularly neglected in our literature. Hence there are many excellent economic and business histories of our railroads, but our historians have given but slight attention to our motor transport. Likewise the economic study of motor transport has not been nearly so well developed as that of rail transport. Yet our highways and motor vehicles are probably the most distinguishing physical aspect of our national life. Although by its very nature this book is an introduction and not a treatise, it does much to remedy this situation.

In view of the diversity of material, the editors have done an unusually skilful job of organization. The book is divided formally into two parts, the historical and the analytical. The first contains nine contributions covering a vast span in time and area. Most useful to readers will probably be the articles on the history of the highway in Britain and America. The Continent and Asia are not covered apart from three pieces dealing with ancient times. The thirty-six contributions in the second part are concerned with the functions, forms, and techniques of the modern highway; and the articles may be grouped under the headings of social aspects, economic problems, legal aspects, technological problems, and highway administration. Here the reader is introduced to such variegated topics as the effect of the highway on city layouts and on land values, the problem of the railroads in meeting its competition, and the complexities of finance, planning, construction, and maintenance. The individual pieces are well done, but in general they are too short to be of great service to specialists.

The material on the economic aspects seems to me to be the weakest. While general principles regarding highway finance are discussed, the book does not fully get to grips with the currently active controversies over alleged subsidies to motor transport, over the proper accounting of expenses, and over the effects of heavy truck movements on the cost of surfaces. Thus it is impossible to get a clear view of the natural advantages and disadvantages of motor transport and especially of the common-carrier section. Indeed, the book seems carefully to avoid controversial issues.

Nevertheless, the editors have done a useful task in assembling under one cover such a pertinent collection of materials on American motor highways. The work may be read in whole or in part with great profit.

JOHN G. B. HUTCHINS

Cornell University

Natural Regions of the U.S.S.R. By L. S. BERG. Translated from the Russian by OLGA ADLER TITELBAUM. Edited by JOHN A. MORRISON and C. C. NIKIFOROFF. New York: Macmillan Co., 1950. Pp. xxxi+436. $10.00.

This book is one of a series of important Russian works selected for translation by the Russian Translation Project of the American Council of Learned Societies. The Council is to be congratulated on its choice.

The eminence of the author is well demonstrated in the editor's preface by John A. Mor-

rison. In 1931, after nearly forty years of theoretical and field work in zoögeography, geobotany, geomorphology, soil science, and climatology, Professor Berg completed his great synthesized work, *The Landscape-Geographical Zones of the U.S.S.R.* This work served the author as a basis for preparing a textbook adapted to the needs of students and was first published in 1937. The present translation is from the second edition, which appeared in 1938.

Presentation of all the geographical facts concerning the U.S.S.R. by large geographical zones is the characteristic feature of the book. Such a method appears quite appropriate in considering the geography of an extensive and predominantly level country like the Soviet Union. Except for the Urals and the eastern part of Siberia, only the southern frontier of the Soviet Union is mountainous. However, less than half of the book (the first seven chapters) is devoted to a description of the six major geographical zones, beginning with the tundra in the extreme north and ending with the desert in the south. The larger portion deals with the mountainous regions of the U.S.S.R. This may be explained by the more complex characteristics of these regions.

Within each zone the characteristics of climate, relief, soils, vegetation, and fauna are treated. When a zone is so large as to display too much diversity, it is divided into subzones. Thus, the forest zone is divided into two, taiga and mixed forest, and, in addition, the broad-leaved forests of the Far East are described in a separate chapter, since they are quite different in character from the mixed-forest subzone in the European part of the Union.

Zonal characteristics of climate, soil, and vegetation, established in the chapters describing the separate zones, are profitably used in describing the mountainous regions, where variations of these characteristics depend mainly on elevation. For this reason, description of the mountainous regions generally starts with the relief, while the variations of climate, soil, and vegetation are usually given by belts of elevation, somewhat analogous to the geographic zones. This method of describing mountainous regions gives a great deal of unity to the whole book.

Interest in Berg's work is intensified by the fact that he does not limit himself to a simple description of zones (or mountainous regions). He always attempts to explain regional features from the interconnection of various geographical factors and by reference to the facts of geological history. His broad knowledge of various natural sciences is extremely helpful in this respect, and his intimate acquaintance with many important regions of the U.S.S.R. makes his presentation very lively. In this respect, the chapters on the desert zone, mountains of Soviet Central Asia, mountains of the Caucasus, and Lake Baikal are particularly interesting. On the other hand, chapters on the mountains of northeastern Siberia and on the Far East give very scanty information even on the elementary facts of climatology. This brings up the intriguing questions: Were these areas still so little explored at the time of preparation of the book (1938)? Or is this another example of Soviet secrecy?

The book is limited to the facts of physical geography, the human element being completely disregarded. However, such important resources for human activity as mineral deposits are mentioned, usually in sections on relief, while discussion of the factors determining human agricultural activity, such as climate, soil, and vegetation, makes up the core of the work. Information on vegetation, as well as on fauna, includes more details than are usual in texts on geography, and these may be of interest also for specialists in those fields.

Most of the twenty-three maps deal with climate and vegetation limits, but several of them present, schematically, ranges of mountains in such little-explored regions as Altay, Pamir, and eastern Siberia. These greatly facilitate reading of the text. However, the use of a good atlas is necessary for a full appreciation of this book.

The translation is done very carefully. Special research was undertaken by the translator to insure the correct rendition of the names of plants and animals. Besides a general index, the book contains an index of plants and one of animals, as well as a very useful glossary of technical terms, especially those adopted from the Russian language. In the Bibliography, only a few of the more important works are indicated; however, numerous references to the literature, especially articles and monographs published in various specialized periodicals in the Russian language, are given in footnotes to the text. The transcription of the Russian titles (with their English translations) in these references will be helpful for readers who plan to undertake more detailed study from Russian sources.

It follows from the preceding that the translated book not only will serve as a text for students in geography but may be useful for spe-

cialists in various fields who are interested in the U.S.S.R. It is refreshing that, in contrast to many recent Russian publications, the book does not include any propaganda and is written in a strictly scientific tenor.

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L'Économie soviétique. By CHARLES BETTELHEIM. Paris: Recueil Sirey, 1950. Pp. viii+472. Fr. 1600.

The appearance of this book along with Baykov's *The Development of the Soviet Economic System* published in 1946 and Dobb's *Soviet Economic Development since 1917* published in 1948 brings to a total of three the number of up-to-date general works on the Soviet economy.

The book consists of a series of descriptive-analytical-historical studies of the main aspects of the Soviet economy: agriculture, industry, domestic commerce, foreign trade, money, credit, and public finance. These chapters are prefaced by chapters on the economic history and general institutional framework of the Soviet economy, respectively, and are followed by a chapter on planning and the author's conclusions. This approach is in distinction to the more historical one employed by Dobb and to a lesser extent by Baykov. The difference in the two approaches is reflected in the fact that Bettelheim achieves comparative success in presenting a well-organized institutional and statistical picture of the development of each of the above-mentioned sectors of the Soviet economy in isolation but fails to convey to the reader, in spite of his prefatory historical chapter, a sense of the dynamics of Soviet development as a whole.

In his conclusions the author stresses the differences between Soviet and capitalist economic categories (prices, business contracts, money, wages) stemming from the replacement of private ownership of the means of production by social ownership and the replacement of private initiative by planning. The nature of the plans and the processes of planning are described in considerable detail (chap. x). The reader learns that the well-known method of "balances" is the principal tool of the planners for achieving economic equilibrium. He is not told, however, by what technique the thousands of economic decisions which underlie the "balances" are made and at what level of economic efficiency equilibrium is achieved. This is an unfortunate omission in view of the controversies on this subject in the socialist planning literature and especially at this time in view of the current Soviet attempt to revise and use the price system more effectively in planning.

The book also contains several errors of fact and interpretation. For example, Bettelheim claims (p. 269) that Soviet trade operates "in the service of the consumer" because trading organizations earn a very low rate of profit. The margin of profit allowed trading organizations, however, bears no relationship to the share of the consumer in the national output. The main reason why such profits have been small is that Soviet policy is to collect the bulk of the economy's "profits" in the form of a turnover tax which is levied before commodities enter retail trade; secondarily the low rate of profits of trading organizations is to be explained by the very moderate planned investment requirements of organizations of this type. A similar misinterpretation is made in the discussion of the financing of social security (pp. 191–92). These misinterpretations result from Bettelheim's failure to observe his own distinctions between Soviet and capitalist economic categories.

In spite of these and other errors, the book is a welcome addition to the still limited economic literature on the Soviet Union. The author has done an excellent job of gathering and distilling into a useful form, with some interesting insights, a huge mass of institutional and statistical material, although in some respects one would wish that he had adopted a more critical approach to the data and the problems discussed. Those engaged in research on the Soviet economy will want to examine his extensive bibliography. All students will value this book as the only publication in which the bulk of important Soviet postwar economic developments (to early 1950) are recorded and analyzed.

F. D. HOLZMAN

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Industrial Revolution in Mexico. By SANFORD A. MOSK. Berkeley and Los Angeles: University of California Press, 1950. Pp. xii+331. $3.75.

Since the second World War the increasing preoccupation of the United States with the economic progress of the world is reflected in a growing number of books on the economy of foreign countries. The Twentieth Century

Fund's trilogy on Greece, Turkey, and Brazil and Spiegel's companion piece on Brazil are followed in 1950 by two works on Mexico: one by Columbia University's Frank Tannenbaum and another by Professor Sanford A. Mosk of the University of California, which will find more interest among economists, for good reason. Not only is it the most comprehensive survey of the Mexican economy but it contains invaluable lessons about the difficulties of a country making a brave effort to develop rapidly.

Significantly, the factual presentation of Mexico's industrial development is deferred to the second part of the book, while the first is devoted to the economic philosophy and the motivation of deliberate industrialization. The professed and the underlying aims and policies of the growing and dynamic group of new leaders of industry received from Mosk a more coherent presentation than their proponents ever expressed. The chapters on government, industry, and labor review the swing of the pendulum from President Cárdenas' agrarian reform to Alemán's policy of industrialization, with its wide support by industry, labor, and the intelligentsia. The government's measures of promotion and protection are expertly presented; the dangers of overprotection are not ignored.

The second part presents the changing role of industry in the Mexican economy, without overreliance on the somewhat doubtful statistical material. (An added grain of salt in conclusions from national income statistics at current prices might have been in order.) The description of the industrial plant is frequently seasoned with shrewd comments on the wider aspects and difficulties of balanced growth. The short chapter on tax exemptions in practice deserves specific mention as a realistic appraisal of contemporary policy and as a concise summary of considerable research.

In the third part, Mosk tackles the hard problems which beset a developing economy. The chapter on the internal market contains a review of Mexico's agrarian reforms and development projects. The limited purchasing power of that largest sector of the economy impels the warning that industrial growth may outrun its own market. A chapter on capital and credit is a very elaborate review of Mexico's complicated machinery for direct and indirect government financing of industrial development, owing to the stunted private investment market which is a characteristic of all backward economies. The author attempts to show that the strenuous efforts to attract capital by offering a combination of security and high earnings may defeat the essential "education" of venture capital. The role of foreign capital and the Mexican ambivalent attitude toward that needed, yet feared, factor are set in their economic-political backgrounds.

Inflation is one of the most persistently intractable phenomena of many underdeveloped countries, and Mosk devotes an entire chapter to the question whether rapid industrialization per se is inflationary. The Mexican experience seems to justify an affirmative answer, even by those who are less inclined than Mosk to attribute a good share of the guilt to the wartime excess of visible and invisible exports over imports. The inflationary facts are convincingly presented, but a weighted retail index, such as the cost-of-living index in Mexico City, would have shown an even steeper rise, increasing inequality of incomes, pressure upon the sadly undersized middle class, and growing corruption among underpaid officials. These are some of the social consequences of creeping inflation which deserve special attention. Planners in many underdeveloped countries have accepted "controlled inflation" as an instrument of compulsory savings; but, unfortunately, the incidence of sacrifice is heaviest among those who can least afford it. Mosk's conclusion that industrialization may have to be slowed to control inflation in Mexico may not be so popular as other sections of his book.

The inescapable comparison between the books by Mosk and Tannenbaum would not be quite fair to either; they differ too much in scope and emphasis. Tannenbaum covers more ground, and he writes for a wider public; moreover, his love for the traditional way of life in the Mexican village he knows so well causes him to take a dim view of "big industry." Mosk, on the contrary, realizes the strong motive forces behind the drive to industrialize. His account is factual and balanced and his appraisal expert and unbiased. Most important, the wealth of material he accumulated is closely knit into a picture of a growing economy from which the dynamic elements emerge with rare clarity. His approach could serve as a model for future studies of underdeveloped countries.

HENRY G. AUBREY

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The Customs Union Issue. By JACOB VINER. New York: Carnegie Endowment for International Peace, 1950. Pp. viii+221. $2.50.

Most writers, including economists, have looked with favor upon the customs union as an arrangement to eliminate or reduce trade barriers between political units. Significantly, the popular attitude has not been based upon rigorous economic analysis. In the present volume, however, we have what appears to be the first rigorous treatment of the subject. The general conclusions do not support the popular view.

Professor Viner presents, as usual, a penetrating and lucid exposition of his subject. He first shows that the customs union has generally been regarded as compatible with most-favored-nation obligations, whereas until this century most other forms of preferential arrangement have not. The fact that actual customs unions have been comparatively rare is explained in terms of the formidable barriers to mutual agreement to establish them—a conclusion, incidentally, which is consistent with recent experience in the case of Benelux. In this century, nations have been largely successful in obtaining exemptions from most-favored-nation obligations for preferential arrangements other than the customs union. We have had, in consequence, such familiar arrangements as imperial preference, regional agreements, and plurilateral agreements.

It is in the chapter dealing with the economics of customs unions that Viner disentangles the customs-union problem from the whole free-trade–protection issue. The main purpose of a customs union is to shift sources of supply. This shift can be either to lower- or to higher-cost sources. If the shift is to the former, the customs union is a movement in the direction of free trade; if to the latter, it is a device for making tariff protection more effective. To the free-trader, a customs union benefits the customs-union area as a whole only with respect to wholly new trade between the member nations. New trade that is a substitute for trade with third countries injures the importing country and the world as a whole, being beneficial only to the supplying member country. What about the case in which a customs union permits existing industries to realize decreasing costs? Viner holds that the importance of this is exaggerated. The relevant economies of scale are for plants and firms; large-scale plants are practicable in small industries and therefore in small countries. It is well known that in most industries plants can attain or closely approach optimum size even though the industries are not large; moreover, in the absence of trade barriers even small countries could have large industries.

In dealing with the Havana Charter, Viner points out that the charter disapproves preferential reductions of tariffs but approves customs unions. As the author states, there is "some supposed virtue in a 100 per cent preference, which suddenly turns to maximum evil at 99 per cent." This inconsistency in the charter is now generally condemned; and yet too much should not be made of the matter. Far more important is the likelihood that the operation of the charter, and especially the multilateral reduction of trade barriers, may result in generally improved international economic relations among ITO members. Consequently, there may be less interest in customs union (or any kind of preferential arrangement) as a possible means of relieving economic strains.

Viner's general conclusion is that for the long-run problem of raising the level of living of peoples of the world, the customs union "is only a partial, uncertain, and otherwise imperfect means of doing what world-wide non-discriminatory reduction of trade barriers can do more fully, more certainly, and more equitably." The student of the problem can get no better analysis than in this book, and in his search for source material he will be aided by some seventy pages of bibliography and lists of conventions and decrees relating to customs unions.

VIRGIL SALERA
San Jose State College

Peace by Investment: A United Nations Workbook. By BENJAMIN A. JAVITS. New York: Funk & Wagnalls Co., 1950. Pp. x+242. $3.50.

This is the book not of an academic economist but of a financial practitioner with wide international experience. It is a book with a message. It is the author's contention that world capitalism will lose its struggle for world dominance and will go down in a world war of apocalyptic destructiveness unless a far greater, far more sustained effort in supporting the weaker segments of world capitalism than even that provided under the Marshall Plan is forthcoming. His method is world industrialization through private credit for reproductive purposes.

With the fundamental thesis of the author I have no quarrel. This does not mean that I am willing to accept at face value the figures of twenty billion dollars per year of international credit over a fifty-year period, mostly from the United States, which the author deems necessary to achieve his goal. Such forecasts over decades are problematical at best. It seems especially doubtful that the need for private international investments by the United States should not taper off more in later years than the author anticipates. After all, with a normal recovery of the world economy, some countries will need less capital imports; and countries other than America will become capital exporters.

It seems that the author underrates the importance of other factors, especially the importance of a clear-sighted and strong diplomacy backed up by a considerable military effort. Especially in his discussion on Russia and on peace with Russia and in the passages on China, where he puts his hope on the fact that the masses of China at heart are not Communists and therefore can be won over by a business-like approach, he gives the impression of an overly great trust in the power of the mere dollar as a peacemaker under any political circumstances. Unfortunately, peace cannot be bought merely with dollars.

Particularly valuable parts of the work are some of the discussions of various areas which are to receive American investment. The statement on Great Britain seems in both its economic and its social and political aspects especially well informed and well balanced. The troubles of France lie perhaps somewhat deeper than the author indicates. The reluctance to embrace modern industrialization stems from the reluctance to give up or at least to jeopardize a traditional culture of aristocratic origin which seems economically tied up with the traditional individual craftsmanship of France. Also the cleavage between the France of the *ancien régime* and the France of the Revolution is not clearly seen. The observations on Germany, which has to be restored to its role as the industrial hub of Western and Central Continental Europe, are generally well taken. It seems unrealistic, however, to assume that Germans ever would work and support the democratic capitalistic regime of the West if they were kept in the role of a road force operating under foreign supervisors, even if these were not military or government men but foreign businessmen and engineers. Events have already passed by this stage.

Returning to the economic argument, it seems strange that the author not only puts little emphasis on the difficulty of inducing vast international investments of private funds in a world threatened with war and revolution but never seems to face the problem of how international private investments can take place when the receiving countries restrict their outgoing payments. It is quite true that those investments (and possibly a good part of the return thereon) must in the bulk remain in the receiving countries for long periods. But this will be possible only if the individual investor can receive payments in his own currency if he so chooses. Private capital will not go into foreign captivity.

HERBERT VON BECKERATH
Duke University

History of the National Economy of Russia to the 1917 Revolution. By PETER I. LYASHCHENKO. Pp. ix+880. New York: Macmillan Co., 1949. $13.00.

It is a frequently encountered, not to say prevailing, view that the history of Russia has been molded to a dominating extent by factors essentially different from those that determined the destinies of the Western world. Whether this peculiarity of Russia is attributed to some innate characteristics of the Slavs—"a coarse, violent and emotional race"—or to geographical and geophysical circumstances, such as the "shifting relationship between the forest and the steppe zones," much of the contemporary Western writing on Russia's past and present is strongly influenced by the notion of the "uniqueness" of Russia's historical development.

This concept—very dear to the Slavophiles of the nineteenth century and for altogether different reasons to the Slavophobes of the twentieth—has been severely criticized on various occasions by outstanding historians and social scientists in Russia and elsewhere, most successfully perhaps by Lenin in his *History of Capitalism in Russia*.

Yet it is the English translation of Lyashchenko's monumental volume that should once and for all dispose of the theory of Russian "exceptionalism" in the Western thinking on the subject. Not that there are no important differ-

ences between the economic and social development of Russia and that of, say, Great Britain or Germany. What Lyashchenko's account demonstrates convincingly, however, is the remarkable similarity between the basic patterns of the historical processes in Russia and in the West.

The chapters analyzing the structure of feudalism in Russia and comparing it with the feudal institutions of western Europe are most revealing in this respect. Equally interesting in this connection is the account of the growth of towns in feudal Russia, an account that could be most profitably read together with Henri Pirenne's *Economic and Social History of Medieval Europe*.

Of even larger importance to the economic historians of the capitalist age, as well as to the general economist concerned with problems of economic growth, is Lyashchenko's masterful treatment of the genesis of modern capitalism in Russia—the period following the liberation of the serfs. In many respects resembling the *Gruenderjahre* in Bismarck's Germany, this phase of modern Russian history unfolded in a way thoroughly familiar from the experience of many other less "holy" nations. The role played by the state in the development of railroads and certain industrial (mining) facilities—larger in Russia than, for instance, in the United States but quite comparable with that in Germany—is fully explained by the then prevailing institutions of landownership and by the appalling paucity of capital at the disposal of private entrepreneurs in Russia. As in many backward countries in our day, private business, accustomed to more or less rapid turnover and high profits from mercantile transactions, was strongly disinclined to sink its modest funds in long-range projects, the prospects of which were quite uncertain.

The Russian translation project of the American Council of Learned Societies has rendered a major service by including Lyashchenko's work in the series of its most useful publications. Although the translation appears on the whole quite adequate, I feel compelled to lodge one complaint that might possibly be remedied in a future edition and readily taken into account in other similar undertakings. Wherever *non-Russian* authors are cited in the translated Russian work, the citation in the English language edition should be made to refer to the existing non-Russian sources. Thus Lyashchenko's quotations from the writings of Marx and Engels should be made to refer to the available English editions of the works of Marx and Engels, rather than translated back from the Russian with indications of the place and time of publication in the Russian language.

PAUL A. BARAN

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Problèmes d'économie internationale—une nouvelle expérience: L'Organisation internationale des échanges. By JEAN WEILLER. Paris: Presses Universitaires de France, 1950. Pp. 333. Fr. 800.

Most of Professor Weiller's book is devoted to such matters as Bretton Woods, the Havana Charter, and Marshall aid, which are well known to American readers. In the concluding section, however, he offers some reflections on the theory of international trade, and it is this section which will be dealt with here.

As a Frenchman who is above all else aware of the immensity of the task of economic reconstruction following the last war, Weiller finds the traditional theories of automatic adjustment to be entirely unacceptable. Policy based on such theories will lead only to an *équilibre de misère*. The central ideas of traditional theory, including even comparative advantage, are valid and relevant only in a world in which (*a*) long-term capital movements take place on a truly large scale and (*b*) price elasticities of demand for imports are high in all the major importing countries. Since such a world no longer exists (I am convinced that Weiller, like some other writers, suffers from excessive elasticity pessimism), the older analysis might as well be forgotten. Special regional blocs, discrimination against persistent trade creditors, and the like are implicit in his analysis.

Weiller's position is open to the same objections that have been raised against the views of Balogh, *The Economist*, and other advocates of discriminatory policies. The process of adjustment takes time. Instead of belaboring the shortcomings of classical theory—few if any of us are strict classicists anyway—the emphasis should be on the conditions of adjustment today. The disequilibrium we face is fundamentally a reflection of altered patterns of world demand and supply. This situation calls for a redirection of production and trade, without disregard for the principles of comparative advantage. To be sure, temporary measures of trade

discrimination (such as are involved, for instance, in the European Payments Union) provide a necessary breathing spell. But, in the last analysis, action must consist of the adaptation of production and trade to the altered patterns of international demand and supply.

VIRGIL SALERA

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Le Plan Marshall, succès ou faillite? By MARCEL MARANTZ. Paris: Librairie Marcel Rivière et Cie, 1950. Pp. 269. Fr. 320.

The question raised by the title of this book is not answered. There is no attempt to present concrete evidence of the economic success or failure of the Marshall Plan. Rather, the author has written a political tract supporting a number of policies which he believes will strengthen western Europe and its friends in the current struggle with Russia. The Marshall Plan is important in this framework because of (1) its beneficial effect upon the economy of western Europe and (2) its indication that the United States has abandoned its isolationism in favor of a policy of active support and economic leadership of the Western nations.

Although a considerable part of the book is devoted to an examination of the development of the Marshall Plan, congressional debates, and the reaction in Europe, this material seems almost beside the point, since it has little relationship to the main thesis or the conclusions of the book. There is almost no discussion of the organizational form either of ECA or of OEEC. Discussion of balance-of-payments difficulties, inflationary pressures, and production bottlenecks is extremely superficial. Many other basic problems faced in attempting the economic reconstruction of Europe are not even mentioned. But noting these shortcomings is, perhaps, only another way of saying that this is a political document, not a piece of economic analysis.

For American readers the possible value of a book of this type is that it permits us to see ourselves as others see us, and in this case the viewpoint is that of a friend (although the friend does not hesitate to be critical at times). The author is definitely French in his approach to world problems; fear of Germany and irritation with Great Britain creep into a number of paragraphs. Lack of understanding of the problems of other European nations is perhaps best illustrated by the inclusion on page 73 of Norway among the countries that were not seriously damaged by the war.

Most Americans will probably enjoy (because they agree with) the author's treatment of Communist attacks on the Marshall Plan and of the "Third Force" or European neutrality idea. On the other hand, they may resent such typically French statements as the one on page 268: "Inférieure au Nouveau Monde par la puissance technique, elle [western Europe] est encore capable de jouer par rapport à lui, dans une large mesure, le rôle de 'leader' moral et spirituel." But we cannot disagree with M. Marantz' main thesis that the survival of Western civilization today depends upon political, military, and economic co-operation of those nations which share in common our ideals of human liberty.

R. MURRAY HAVENS

University of Alabama

Trusts et cartels dans l'économie mondiale. By RICHARD LEWINSOHN. Paris: Librairie de Médicis, 1950.

The principal part of this work is a hundred-and-fifty-page essay on the rise of business combinations throughout the world and the development of governmental policies relating to them. The essay is interrupted at two points to inject long descriptive sections. The first of these sections attempts to present the history and current status of trusts (giant corporations) in all major industries throughout the world, and the second purports to do the same thing for cartels.

Lewinsohn's project would be a formidable undertaking for a much longer volume. The descriptive sections are particularly disappointing, as there is little room to present the technological and resource conditions of the industries or to describe in detail the policies of the various combinations. There are unfortunate omissions: for example, he is content to say that the International Steel Cartel maintained stable prices for several years, without adding that prices rose 75 per cent or more during 1937. The descriptive sections of the book apparently were written before World War II, and only in places has there been any effort to bring the material up to date. This portion of the work compares unfavorably with many case studies which have appeared in recent years, and Erwin Hexner's *International Cartels* provides a much more satisfactory general treatment.

Lewinsohn begins with definitions of terms

and a brief survey of early prototypes of the modern business combination. Next, after "trusts" in different industries have been described, there is a succinct statement on the policies of these giant corporations and a comparison of relevant government policies of the United States and certain British dominions with those of European nations. A similar treatment follows the descriptive section on cartels. The growing participation of governments in both types of business combination receives deserved attention. In these pages American students of the subject will discover little that is new, although they generally will be in agreement with the author's estimates. Here also portions of the work are dated: there is no recognition of this country's stricter interpretation of its Webb-Pomerene Act, and the abandonment of the Western powers' antitrust program in Germany passes unnoticed. The final conclusion, that except in the defeated countries business combination is proceeding more rapidly than during the 1930's, is scantily documented.

The work suffers from the author's frequent failure to relate the differing circumstances of particular industries to variations in the policies and social justification of combinations in those fields. Yet this type of knowledge should be the basis of a discriminating government policy.

FRANK J. KOTTKE

University of North Carolina

Capitalism and French Glassmaking, 1640–1789. By WARREN C. SCOVILLE. ("University of California Publications in Economics," Vol. XV.) Berkeley and Los Angeles: University of California Press, 1950. Pp. vii+210. $2.50.

There can hardly be very many things worth knowing—and knowable—about the French glass industry before the Revolution that one cannot learn from this fine monograph. After summarizing the growth of production (on the order of four- or fivefold) and the evolution of glassmaking technology, Scoville attempts in the second part of his study to account for the quantitative and organizational changes that took place. He finds that some branches (dark glass bottles and sheet glass) expanded with great rapidity especially after 1720, while slower growth was evident in older branches like plate glass and common green glass. He rightly adopts a multiple-cause explanation of these varying rates of growth, and, while he seems to stress general economic factors like population growth, expansion of maritime trade, improvement of internal transportation, and increasingly sumptuous habits of consumption among the middle classes, he also deals skilfully and adequately with such variables as changes in taste, the relative scarcity of fuels and other basic materials in some regions, governmental policies, and the supply of skilled labor.

Though the title leads one, perhaps, to expect a fairly wide-ranging discussion of some of the more general problems presented by the transition from handicraft to factory production, the study contributes rather less in the way of new understanding here than it does on the factual side. Scoville writes with extreme caution whenever he ventures away from his archival materials into the riskier sphere of interpretive generalization. Consequently, while the evolution of glassmaking is traced in meticulous detail, too little attempt is made to re-examine our received notions about the development of capitalism or to test these generalizations in the light of the facts about this particular industry. Scoville's facts, for instance, suggest that glassmaking, by the nature of its technical processes and by virtue of the relatively expensive apparatus required, was never without important elements of "capitalism," even in its earliest modern phases. Thus it never made any considerable use of domestic workers, largely because its processes did not lend themselves to a "putting-out" system. In short, it seems to make little sense to speak of a "transition" to a factory system of production because, apart from secular increase in the number and the average size of workshops, it is extremely difficult to find any such transition. Similarly, on the financial side, one is left with the impression (though Scoville might well have gone a little more deeply into the matter) that the great bulk of plant expansion was paid for out of accumulated earnings and that there was apparently a less intimate set of relations between the glassmaker and the wealthy merchant or banker than one might have expected to find in this period. If these impressions are correct, the point would at least have been worthy of more extended comment and might well have prompted further reflection about our current explanations of the origins of "industrial capitalism."

It would be wholly unjustifiable, however, to dwell at too great length on the things the author might have discussed if he had chosen to

do so. His study comes close to being a model of perfection for this kind of monographic research and will be most warmly welcomed by other students of the early modern period because it presents in admirably lucid fashion the results of extremely intensive and thorough investigation in manuscript materials many of which have not been previously subjected to examination or analysis, and because of the intrinsic interest and significance of the subject itself. Scoville deserves special praise for keeping his text reasonably free of distracting minutiae and extraneous detail, as well as for his successful efforts to enliven his account with relevant touches of human interest. Like every valuable work of its kind, this one raises many problems which might profitably be looked into further, but if the research scholar aims primarily at satisfying curiosity, it is also one of his functions to promote other fruitful inquiry in areas adjacent to his own, and it may truthfully be said that the present study performs both these tasks on a very high level of excellence.

RALPH H. BOWEN

Columbia University

The Schumpeterian System. By RICHARD V. CLEMENCE and FRANCIS S. DOODY. Cambridge, Mass.: Addison-Wesley Press, Inc., 1950. Pp. 117.

The authors of this essay have undertaken to redirect attention to Schumpeter's now thoroughly neglected *Business Cycles*. By the "Schumpeterian System" they mean his way of thinking about the course of economic development in Britain, Germany, and the United States.

Clemence and Doody favor the Scholastic approach. The main points in Schumpeter's analysis are summarized; possible criticisms are then listed and examined; and the conclusion is offered that all the objections to the Schumpeter system so far raised fail to damage the model to any discernible extent. The essay is excellently done, being closely reasoned and carefully executed.

The authors make no immodest claims for Schumpeter. They do, however, reproach us for having been so preoccupied with extolling and impugning the merits of employment analysis in 1939 that we greeted the appearance of his magnum opus with respectful indifference; for by their view it offered both an imposing engine for the investigation of business cycles and a well-thought-out world picture lacking in *The General Theory*.

Clemence and Doody are also inclined to pass over the inevitable imperfections in Schumpeter's work (hardly a fault in a man's students). Even the venerable zero-rate-of-interest controversy is resolved in the master's favor, although he himself was confused on this point and Frank Knight settled the issue in the early thirties. As Knight indicated, if the technical possibilities for capital accumulation are ever exhausted, the interest rate does not go to zero —it merely becomes irrelevant to investment decisions, since net investment becomes axiomatically impossible. The authors salvage Schumpeter's position by making it rest on the assumption that time preference would not exist in a world of perfect certainty (pp. 28–29).

Yet, on balance, I do not believe that this essay will convince the reader that economists have erred in eschewing the master's magnum opus for his more lucid essays. Certainly by the standards of 1911 Schumpeter was a first-rate price theorist; but a generation of students raised on the work of Knight, Keynes, Hicks, and innumerable journal articles can discern too many flaws in his analytic structure. From his earliest writings he held firmly to the conviction that the entrepreneur (who by definition introduces the innovation) is the supremely important character in recent economic history. And while this idea sufficed for an excellent essay in *The Theory of Economic Development*, it cannot, I think, support adequately a "system," refined by the addition of postulates about circular flow, zero rates of interest, the clustering of innovations, etc. Indeed, the disturbing doubt intrudes that Schumpeter really attempted an impossible task, that no large portion of economic history can be handled satisfactorily by a model-building type of analysis. Even Marshall found to his sorrow that economic history, save perhaps for brief incursions, is best left to economic historians.

Still, as Schumpeter regarded the *Business Cycles* as the great work of his life, it is proper that the thesis developed in *The Schumpeterian System* should have a sympathetic hearing. We owe at least this much to a great teacher.

DONALD DEWEY

Duke University

Der Weltgetreidemarkt nach dem Zweiten Weltkrieg. By RODERICH PLATE. ("Hefte für landwirtschaftliche Marktforschung," Heft 4.) Berlin and Hamburg: Verlag Paul Parey, 1950. Pp. 233.

This small volume is one of the series published by the Institute for the Study of the Agricultural Market, Braunschweig-Volkenrode, Germany, and directed by Dr. Arthur Hanau. In his Introduction, Hanau explains that Germans now must study the world grain market carefully, since western Germany depends greatly on grain imports.

The book is divided into three parts. Part A, the largest, deals with the evolution of grain production in the principal importing and exporting areas, during and after World War II. Part B, the shortest, is devoted to the study of the world grain market, with particular attention to the grain needs of western Europe and of Asiatic deficit countries. In Part C the author analyzes the prices of grain, explaining them not only by developments in the grain market itself but also with reference to the general economic and financial situation of the world. In each of these parts the author not only analyzes the past but presents the outlook for future development.

For his presentation the author uses mostly statistics published by the FAO. His primary interest is in the economic analysis of statistical data rather than in their criticism. However, he points to the necessity of a critical use of the wartime and postwar crop statistics of western and eastern Europe and, especially, the U.S.S.R.

Most of the study is devoted to the analysis of the situation in the grain-exporting countries, particularly in the United States. Not only are production and supplies in this country studied carefully but also variations in our requirements and our agricultural policies, with special attention to the price-support policy. In a concise form Dr. Plate succeeds in presenting a fairly complete picture of the evolution of American agricultural policy since 1933 and in making a sound appraisal of it. While commending the United States government's long-term guaranty of remunerative prices to grain producers during the war and its policy (contrasted with the policies of other grain-exporting countries, particularly Argentina) of passing to the growers the full postwar increase in grain prices, the author rightly sees dangers in the maintenance of grain prices at too high a level during the last years. He believes that this policy, affecting also the world prices of grain, diverts large quantities of grain from normal channels, especially from use on farms for feeding purposes. On the other hand, Plate comments rather favorably on the new International Wheat Agreement, seeing in it substantial progress compared with the prewar commodity agreements.

The author's analysis of the world grain market and prices in the light of general economic and financial development is, in most cases, sound and interesting. In some places it appears, however, that he undertook too heavy a task to be accomplished within the limits of a small booklet. This relates particularly to his analysis of the prewar development of grain prices. In a space of five small pages he attempts to explain very complex phenomena of the interrelationship between grain prices and the economic fluctuations during many decades. This section is, perhaps, the least successful of the book.

Generally speaking, for those who read German, this booklet may serve as a good introduction to the actual problems of the world grain market.

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